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DYSMENORRHŒA, WITH ITS CAUSES AND TREATMENT—VULVO-VAGINAL ABSCESS.

CLINICAL LECTURE DELIVERED OCTOBER 18, 1892, AT THE JEFFERSON MEDICAL COLLEGE HOSPITAL.

BY E. E. MONTGOMERY, M.D.,

Professor of Clinical Gynæcology, Jefferson Medical College; Obstetrician to the Philadelphia Hospital; Gynæcologist to St. Joseph's Hospital.

GENTLEMEN:—I propose to-day to bring before you a series of cases illustrating disordered conditions of the structure of the uterus, particularly the cervix. These cases illustrate more particularly the inflammatory conditions of this portion of the genital tract, and give rise to the symptom known as dysmenorrhœa. Disease of the uterus is indicated by the derangement of the performance of its functions. The first and most frequently performed function is that of menstruation, and the ease and comfort, or the pain and discomfort, the regularity or irregularity with which it occurs, the quantity—whether abundant or slight—are phenomena that lead us to determine the necessity of subjecting the patient to a physical examination, and giving her treatment to relieve the abnormal symptoms. Painful performance of the function may arise from a variety of conditions, so that we are not justi-

fied in assuming in an individual case that because she has dysmenorrhœa there is a particular condition present by which it is produced. In eliciting the history of the patient, we would ascertain whether the pain precedes the menstrual flow, begins with it, immediately follows it, or continues during the entire period. There are a variety of lesions which may give rise to this particular symptom. It may be due to obstruction. The uterine canal is stenosed, and, as a result of the obstruction, the patient goes into labor-like efforts to empty the uterus of its contents, and these contractions cause pains similar to those which take place during labor. Where obstruction is marked, blood accumulates in the uterus, forming a clot, and this is only expelled by severe contractions.

The obstruction may be due to a stenosis, to a flexion, or other displacement of the uterus. Thus, in flexion, the angle at which it takes place forms a constriction, the mucous surfaces lie in contact, and where marked, may with difficulty be overcome. It is true the patient may have a cervical canal so small that it only presents a pin-hole orifice, or there are cases in which retroflexion or anteflexion exists, in whom there is not the slightest amount of pain during the menstrual periods; other cases in whom the cervix is so large that we can pass an instrument to the fundus, and yet the patient suffers severe pain at each menstrual period. In such cases we must consider some other reason than the obstruction as an explanation of the pain. It is better explained under what is known as the congestive theory,—*i.e.*, in these patients the chronic inflammation of the uterine mucous membrane leads to its thickening at each menstrual period, and a contraction of the middle layer of muscular fibres of the uterus, resulting from the erection of the organ, causes diminished calibre of the uterine cavity, so that it is no longer sufficiently large to afford room for the accommodation of the swollen mucous membrane, and the pressure of the surfaces upon each other gives rise to distressing pain until the flow is fully established. These patients suffer pain from the beginning, or just preceding the flow, and after it becomes established the pain ceases,—in other words, with the establishment of the flow the engorged mucous membrane is relieved and the patient no longer suffers.

The first patient I bring before you is a woman, twenty-seven years of age; father died of pneumonia; mother healthy; menstruated at thirteen; was always regular until marriage, at twenty-three; never been pregnant. While we have in this patient no history of an interference of the function of menstruation, the other function of the uterus—that of childbearing—is disturbed; she has been sterile. Soon after marriage her abdomen became enlarged, and four months later she supposed herself pregnant. She had a menstrual flow, which occurred at what would have been her period, which lasted two weeks. Since this she has suffered very greatly from pain in the back. Menstruation became painful, pain has occurred four or five times a day. Her work keeps her on her feet all day. She has suffered from this pain during the entire four years; suffers also from constipation of the bowels, with more or less indication of hemorrhoids. Two months ago she developed symptoms of chorea, which began with spasmodic contraction of the face and neck. She feels the same spasms in the muscles of the uterus. The attack of chorea obliged her to come under observation and seek treatment. The chorea, as you notice, is quite marked, leading her to bend the body in different positions. Now, the history of painful menstruation, more or less distress or discomfort in the pelvis, of sterility, has led us to consider the advisability of treating the local disorder with the hope that by so doing we may relieve her nervous condition.

As we examine this patient we find the uterus acutely anteflexed. The fundus is thrown forward upon the cervix, which of itself would probably lead to painful menstruation. The history shows that the pain and discomfort in menstruation has occurred since marriage; that she was free of it before. It is quite possible, and I believe very probable, from the peculiar symptoms present in this patient, that the flexion existed before marriage, but that it was not at that time associated with inflammatory conditions, that the inflammation has developed since marriage and produced the painful menses. Since marriage pain has become great, simply as a result of addition of inflammation. It becomes a question in such a case, "How shall we treat the patient?" It is recommended in many of these cases that the patient be subjected to dilatation of the uterus, thorough curetting, packing the cavity with iodoform gauze, or the introduction of a drainage-tube. The one difficulty, however, is that the flexion still remains after the treatment has been in use, and very soon the inflammatory symptoms redevelop. For this reason we propose, in this patient, to first dilate the cervix, curette the cavity, and then split up the posterior lip to the junction of the vagina, and in so doing

straighten the canal and make the external os at the junction of the vagina with the cervix. In this way the canal is rendered less tortuous, the menstrual flow escapes with less discomfort, and the probabilities of the patient becoming pregnant are increased. In performing the operation, we exercise the same care in cleansing the parts, our hands, and our instruments, as we would do if we were about to undertake an abdominal section. The vagina is thoroughly cleansed with soap and water, which should be impregnated with two per cent. of creolin. In washing the vagina, you take a piece of gauze, or better, some antiseptic wool, having the fluid poured in from a pitcher, the cavity is thoroughly scrubbed. In so doing, we remove the mucus, exfoliated epithelial cells, and material which would be retained in the crevices of the vagina and would escape removal and sterilization by the ordinary vaginal irrigation. Following this application, the vagina is irrigated with sterilized hot water. Of course, as a preliminary step, the pubes and external genital surfaces have been thoroughly shaved. Dilating the uterus, we introduce an Edebohl's speculum, the patient lying upon her back; grasp the cervix with a volsellum, hold it firmly, then introduce graduated bougies one after the other, until the uterus is dilated to sufficient size, usually from a 36 to 43 French scale. Smaller bougies are introduced with the greatest care, for, by careless handling in a canal such as this, the instrument may be shoved directly through the fundus of the uterus into the abdominal cavity. This has occurred to me twice. Once I simply packed the uterus with iodoform gauze, feeling sure that it would establish free drainage. In the other, as it had been intended to shorten the round ligaments, an abdominal incision was done instead, when the ovaries were found markedly cystic; one was removed, and a cyst removed from the other, and the incision sutured. The puncture in the uterus was readily recognized and its peritoneal surfaces sutured over it. Both patients recovered without untoward symptoms. These cases illustrate the fact that the mere puncture of the uterine walls by the bougie is not necessarily dangerous, although it is not a procedure we would desire to have occur. On account of the tendency, however, of smaller instruments to puncture the uterine walls, I am in the habit of using as large an instrument to begin with as the cervix will permit to pass, as there is much less danger of injuring the walls in the use of the larger instruments than the smaller. Where the cervix is very tight, it will be preferable to use the parallel-bar dilator to accomplish the first dilatation, following it by bougies. Having accomplished the dilatation, we proceed to the use of the curette. For this purpose the sharp, fenestrated instrument is preferable, going over the entire mucous surface, scraping away the hypertrophied tissue.

In this patient, having completed the dilatation and washed out the cavity of the uterus, we irrigate with a sublimate solution or peroxide of hydrogen. We proceed to operate on the posterior lip. This is done by introducing the probe-pointed blade of a Kuchenmeister scissors into the cavity of the uterus and cutting through the posterior lip. This brings it up to the junction of the cervix with the vagina; then, with a knife, I still further enlarge the opening over the cervical canal. To prevent this from contracting, we now pack the cavity of the uterus with iodoform gauze, which will be left in place for nearly a week. The ordinary scissors in performing this operation would simply slip off and not cut through the tissue. The scissors I show you have one blade probe-pointed, while the other has a sharp hook upon it, which is driven into the structure of the uterus and holds it until it can be cut through. The cavity of the uterus is then packed with iodoform gauze carried up to the fundus of the organ. This is packed well into the opening below, so as to keep the fresh surfaces separated. The lower part of the vagina is also packed, and a pad placed over the vulva. The latter will be removed to permit the patient to evacuate the urine, or the introduction of the catheter. The intravaginal and intrauterine gauze is removed at the end of from five to seven days. Then the vagina has been thoroughly cleaned, this remains sweet the entire time. It promotes a very free watery discharge from the uterus, and it is astonishing the amount of drainage that takes place under such circumstances. Many cases may thus be treated and relieved who would otherwise be subjected to abdominal operations for the removal of organs which could not be subsequently replaced.

The next patient is a woman, thirty years of age; married four years; no children; complains of excessive pain during sexual intercourse. The mere attempt causes violent spasms of the vagina, frequently rendering such an aggravation that she dreads the mere thought of it. It has been a source of trouble between her husband and herself. She underwent treatment for this two years ago by electricity, and obtained very slight relief. Of late the disease has returned in an aggravated form. Elec-

tricity was given between September and October, 1890, in the form of galvanism, using as high as 30 milliampères; but it gradually recurred, and she is now more sensitive to touch than before. Her menses occur at regular intervals. While she always suffered some pain, during the last four years it has gradually increased with each succeeding period, until now the flow is attended throughout the period with pain of an agonizing character. She has been married four years; never been pregnant. In this patient we have what is generally denominated as vaginismus. While this is spoken of as a disease, yet it usually is associated with some lesions, either in the region of the vulva or of the surrounding parts. In every such case we should carefully examine the surfaces of the vagina and vulva to ascertain whether there is no local source or cause for the irritation. We find here an irritation of the vulva, which is fissured posteriorly, producing a condition similar to that of fissure of the anus. In these cases, mere touch or the slightest dilatation gives rise to agonizing pain, due to the fact that the nerves are exposed in these fissures. It should not be forgotten, however, that fissure of the anus may cause vaginismus, and, where no local symptoms are present, the anus should be carefully examined. This fissured condition of the vulva and vagina not unfrequently arises as a result of disease of the uterus itself. Inflammatory conditions of the uterus give rise to irritating discharge, producing vulvitis, and keep up irritation in that region. So, then, we examine the orifice of the vagina, the condition of the anus, and determine the position, size, and relation of the uterus and the condition of its mucous membrane. In this patient we have, in addition to the symptom of external irritation, history of pain during menstruation and sterility, which would lead us to suspect a diseased condition of the uterus. We have to separate the vulva to see if we can find any local irritation which has already been induced. Examining the anus, we find a crack or fissure upon its posterior surface, which has, without question, aggravated the condition. The uterus is not displaced, but presents a slight flexion low in the cervix. The mucous membrane is slightly abraded. We will proceed to dilate the cervix. You notice in the use of these bougies there is very little bleeding. Thorough dilatation, with curetting, and packing with iodoform gauze, is done. As in the former patient, after-treatment consists in keeping the patient in bed, having the bowels moved early, changing the external pad frequently, and at the end of five or six days removing the gauze from the vagina and uterus. Subsequently the patient will be given vaginal douches twice a day, with 1 to 2000 acid sublimate. In the first case, where we split up the cervix, we will probably pack it again with gauze after the removal of the first packing.

The next patient is twenty-six years of age; healthy as a child, from fourteen to sixteen very delicate; menstruated at nineteen first time; always been irregular, varying from two to five weeks, lasting from two to eight days. The flow has always been painful, and for a day before its establishment would have acute pains from the waist down, more marked on the left side and in the left leg. Married at twenty-one; has never been pregnant; was treated seven years ago for an attack of peritonitis. We are, of course, unable to determine the cause of this attack. In this patient we have another of the series of cases in which deranged menstruation is associated with sterility. Consequently we will impress upon you particularly the association of these two conditions,—dysmenorrhœa and sterility. Where a woman suffers from painful menstruation, she is much less likely to become pregnant. In other words, there is an inflammatory condition, in a great many cases, which increases on the occurrence of marriage, and where one of the unpleasant symptoms is relieved, the other is usually as well. It should be remembered that dysmenorrhœa, however, is not always the result of congestion or obstruction. It may be caused by inflammation of such a character that the changed mucous membrane is thrown off in casts or shreds during the process of the period, giving rise to what is known as membranous dysmenorrhœa. Then, again, we have patients complaining of pain occurring from ten days to two weeks prior to the menstrual flow, pain which is relieved as soon as the flow becomes established. These are cases of what is known as ovarian dysmenorrhœa, where the inflamed tunica of the ovary causes intense pain as soon as the congestion begins to take place which indicates the maturing of a Graafian follicle.

Another cause of pain is diseased condition of the tubes. These, however, give rise to pain following the menstrual flow. After the flow ceases, patients will complain of pains in either inguinal region, lasting sometimes for nearly a week. This is irregular, intermittent in character, and is without question due to the peristaltic action of the tubes in their effort to discharge fluid into the uterus. In some cases we may have slight pelvic peritonitis, resulting from the possible escape of

fluid from the tubes into the cavity of the peritoneum. In others the uterus will be found plugged with thick, viscid mucus, the cervical canal comparatively open. It will be asked in such cases why you would subject the patient to further dilatation when it is evident the discharge can take place? It will be found, the mucous membrane is more or less vascular, bleeds from the slightest touch. The object of dilatation is to afford opportunity for curetting, so that this diseased tissue can be scraped away and a new mucous membrane formed of a better character. In these cases of inflammation, the mucous membrane of the uterus is partially abraded, loses its ciliated epithelium, drainage is defective, and the canal must be curetted and drained just as much as any other would be. As the tendency, in such cases, is to extension of the inflammation to the tube, it is important that the patient should be treated before the inflammation passes beyond the uterine mucous membrane. The plan of treatment I have suggested in these patients is one which meets every indication. The researches of the bacteriologists have demonstrated that the cavity of the uterus contains large colonies of bacteria, which, under favorable circumstances, are capable of multiplying and producing ptomaïnes, the absorption of which will lead to very serious results, if not to the death of the patient. The dilatation and curetting of the uterus under proper precautions, with subsequent packing with gauze, is productive of the very best results. Gauze drains the uterus by its capillary action, by its presence as a foreign body stimulates the contraction, the circulation is increased, the absorption and taking up of inflammatory products promoted, and a uterus that is quite large will thus be melted down and decrease in size. It requires, however, the most exact and careful precaution in preparation and performance. As you have noticed, I have recommended the use of two per cent. of creolin in a soap solution for washing, and that the vulva, vagina, and cervix should be thoroughly scrubbed with this. The creolin is preferred to the bichloride for the reason that it leaves the mucous surfaces oily, while the latter cauterizes the surface and to a certain extent contracts it, leaving it more uncomfortable in the subsequent convalescence.

Vulvo-Vaginal Abscess.—The next patient I bring before you is a woman suffering from enlargement in one of the labia. This is situated in its posterior surface, causing a projection of that labium. As its surfaces are separated, we find it projects on the mucous surface, is quite red, inflamed, and painful to the touch. It is evidently a case in which there has been involvement of the vulvo-vaginal gland from specific contagion, that the duct has become occluded, that the gland infected has given rise to accumulation in its cavity and the formation of pus. The proper plan of procedure in such a case will be the incision of the gland, emptying out its contents, washing out the cavity with peroxide of hydrogen, and packing the opening with iodoform gauze, thus promoting the destruction of the gland.

ABSCESS AROUND THE RECTUM.

A Lecture at the Clinic for Diseases of the Rectum, at the New York Post-Graduate Hospital.

By Charles B. Kelsey, M.D.

GENTLEMEN:—I am glad to be able to show you to-day a case of great practical interest to you all, and one of a kind which you must all be ready to treat at a moment's warning, and often without any opportunity for consultation. The hemorrhoids and the fistulæ you may temporize with; the excisions and colotomies you may send to somebody else; but when called to one of these you must act at once or get somebody else to act for you.

The patient under ether is, as you see, a strong young laborer, in excellent physical condition; on the left buttock and perineum you observe a brawny swelling, which it requires no skill to say contains pus. In fact, after the perineal region has been cleansed and made aseptic, you see me plunge a long, straight bistoury well up into the ischio-rectal fossa and evacuate pus through the puncture thus made. You all notice the foul character and fæcal odor of the same. This does not prove that the abscess communicates with the gut, for pus near the rectum will often have this foul fæcal odor from proximity, without actual perforation.

This, then, is our case,—a simple abscess in the left ischio-rectal fossa, into which I have put a bistoury, and from which the pus is steadily escaping in a small stream through an incision just as long as is the breadth of the knife-blade that made it. But let nobody imagine this case has been operated upon, for we have not begun to operate. I have let out a little pus to show you that pus was there and to teach a lesson; that is all. We will operate later.

The case just as it is now before you reminds me so forcibly of one that I operated upon only yesterday in private practice that I must com-

pare the two to impress the lesson I wish to convey upon you. A young woman on her wedding-journey begins to suffer acutely from pain in the region of the rectum. She bears it as long as she can,—about three days,—and then consults a doctor, who fails to make a diagnosis. After a week of suffering she reaches home, is examined by the family physician, and an abscess the size of a small egg is discovered in the ischio-rectal fossa. Exactly such an incision is made as you have seen me make here, but in that case not for diagnosis, but to cure. Four weeks later I was asked to see the case. The suffering had not been relieved, the patient had been confined to her room and the lounge, and for the last week the pain had been almost unbearable, particularly when the bowels were moved. On examination the puncture made on the right side of the rectum was still discharging freely, and on the opposite side there was just such a painful brawny swelling as you see here. The finger in the bowel showed also that this new abscess was bulging into the lumen of the gut. I say new abscess, but it was not new. It was the same one which had been punctured a month before on the opposite side, and had gone steadily on destroying the parts ever since.

The treatment was radical. First, the old puncture was enlarged till my finger could enter. Next, the newer collection of pus in the other ischio-rectal fossa was incised and the finger of the other hand passed into it. The two fingers came together in the median line between the vagina and rectum, and when the incision was finished it reached from a point well below and to the right of the bowel, straight around over the perineum to a corresponding point in the left fossa. Nor was this all, for on the left side the pus was just about to open into the gut; no tissue was left except unsupported mucous membrane, and a director was forced through this and both sphincters cut. The gentleman asks, "What became of the perineum?" There was no perineum except the skin. What had once been the perineum was part of an abscess cavity. If you ask what will be the effect of the disease and the transversal incision across the perineum for its cure, it will be weeks before I can tell you. Of course the common insertion of the sphincter vaginæ, sphincter ani, and transversus perinæi was cut. I do not think there will be incontinence of fæces, but what will be the final effect upon the vagina and internal organs of this loss of support time alone can tell.

After the incision all septa of broken-down tissue were removed, and the entire abscess cavity being brought to the light, it was dressed with bichloride gauze.

We will do the same to this man, and let him be taken away. I pass a blunt-pointed bistoury into the puncture already made, and enlarge it upward and downward for fully two inches. With my finger I find that this one also has started for the opposite fossa, and also in front across the perineum, instead of behind the anus, and I follow the pus with a transverse incision, but only just up to the median line, which is as far as the pus has had time to burrow.

Now comes the point at which you must use your judgment and when experience is of great value. In the other case I told you that after doing what I have just done here I found the pus separated from the rectum only by mucous membrane, and that it was necessary to divide both sphincters. Here the sphincters will not be divided. The other case, when it was first punctured, was exactly like this, and the same sort of treatment would have cured it. But when I saw it it was practically a horseshoe fistula,—an abscess surrounding the rectum in the form of a horseshoe, with the points turned downward, and with an external opening made by the physician on one side of the gut, and an internal opening made by the disease on the other. I must try and make this very plain to you, because the whole treatment depends upon it. I say that in the young lady's case there was an internal opening, and yet in describing the operation I said the abscess cavity was separated from the gut by mucous membrane, which I tore through with a director, and then cut the sphincters, laying the abscess cavity open into the bowel. The latter was the exact condition, and yet, as in spite of laying open the abscess so freely, this thin partition of mucous membrane was sure to break down later and form a fistula, I treated the case as one of fistula already formed. Had this not been done, the patient would in the future have required a second operation for fistula.

In this case, because we have operated earlier, there is still a good deal of healthy tissue between the abscess and the rectum,—about half an inch. There is no fistula, and there will be none. There is, therefore, no indication for interfering with the sphincters or the rectum.

The rule may be stated in a more general way. When you cut into an abscess around the rectum, and find that one wall of the abscess cavity is made up in part of the rectum itself,—in other words, that the pus is working towards the cavity of the bowel, and has already begun to press upon it,—you may be cer-

tain that perforation of the gut will occur in spite of free skin incisions, that a fistula will thus be formed, and render necessary at some time the usual division of the sphincters. It is, therefore, better to complete the destruction which the abscess has so nearly accomplished, open the latter into the bowel, and do the usual operation for fistula in addition to opening up the abscess cavity.

When, on the other hand, as in this case, you find that you have seen and operated upon the abscess in time, and that the pus has not yet reached the gut, but that there is still sufficient tissue on the rectal side for healing to occur without perforation, you will treat the abscess exactly as though it were in any other part of the body. It is not a fistula,—you have operated early enough to prevent its ever being a fistula,—therefore it has no more relation to the rectum than it has to the urethra, and it would be as sensible to open it into the one as into the other.

Some experience will be necessary to enable you to decide this point in the treatment. Half an inch of tissue between the two cavities is a good practical rule.

And now comes the main point in this whole lecture. It is, in these cases, to always operate without delay. They are not like abscesses elsewhere, where you can wait till the pus finds its own escape. I never in my own practice allow a night to intervene between the diagnosis and the incision in one of these cases, for a few hours may make all the difference between an abscess and a fistula; between continence and incontinence of fæces for life; between a couple of weeks' and many months' confinement. Nor do I wait for pus to form in these cases. They almost never undergo resolution, and it is useless to poultice and waste time. When you see a hard, inflammatory swelling in the perineum or buttock, cut into it at once, and cut deeply and freely. The pus will follow in a day or two, if it is not already formed. In this way only will you prevent great destruction of the soft parts, and perhaps irreparable injury to rectum or bladder. I have shown you how the incision should be made so that no pockets are left. Lay the entire cavity open, break down all partitions and sloughing tissue, irrigate with bichloride, and dress with bichloride or iodoform gauze.

The after-dressing is simple but important. The gauze put in at the time of the operation should be left till it has become softened by discharge and can be removed without pain, say on the second or third day. Often this is the only dressing that need be used during the case, the after-treatment consisting simply in passing the finger along the wound every second or third day to make sure it is healing from the bottom, and not falling together and uniting at the sides, leaving a cavity behind. If there should be any indication for dressings, use them. If the granulations are feeble, stimulate them; if exuberant, cauterize them; but don't stuff the wound with gauze merely because there is a wound. It is a wound that nature will often take care of much better than we can, if we keep it clean with simple water and let it alone.

The complications to be met with in these cases are many. I saw one not long since where the diagnosis was only to be made by rectal examination, there being no hardness or redness of the skin. The pus was away up at the apex of the ischio-rectal fossa, and was pressing upon the rectum at that level, and had also closed the urethra, so that the man's symptoms were very misleading. His physician had made a diagnosis of "inflammation of the rectum" because of the pain in the rectum, but there was no pain around the anus or perineum. The man was also suffering from a distended bladder, with overflow. On examination a hard, inflammatory mass the size of a large orange was found projecting into the gut from the left side, about three inches above the anus.

The important question in such a case is where to evacuate the pus, through the rectum or on the buttock; and here, as in the case you have seen, the decision rested upon the amount of tissue intervening between the abscess cavity and the rectum. Had there been only the rectal wall, I should have incised it, let the pus escape freely by the anus, irrigated and drained the cavity, and left the case to nature, merely keeping the incision into the gut open by the occasional introduction of the finger. The abscess might in this way have healed kindly, or pus might have eventually worked its way to the skin, forming a complete fistula. But judging, from the impression made upon the finger, that there was still a considerable barrier between the abscess and the gut, I determined to open it from the buttock. A long bistoury was therefore passed parallel with the bowel straight up for three inches, till pus appeared by the side of the blade. The incision was then enlarged till it admitted two fingers into the abscess cavity, which was broken up and cleaned out in the usual way. The subsequent treatment consisted only in keeping this incision open by the daily passage of the finger through it up to the abscess. The latter closed up promptly before the deep incision was per-

mitted to close at all, and the patient made a good recovery, without impairment of the function of the parts.

In this way only can the formation of extensive fistulæ, the cure of which may necessitate deep incisions, and future incontinence be avoided. Many patients have been rendered unhappy for life by the mistake of some practitioner in thinking that an abscess around the rectum was the same as an abscess anywhere else, and could either be left to discharge itself, or would do well if the pus were evacuated by a small incision.

THE RELATIVE VALUE OF THE SEVERAL SUBSTANCES RECOMMENDED AS ANTIDOTES TO PHOSPHORUS.

CONTRIBUTION FROM THE LABORATORY OF THERAPEUTICS OF THE JEFFERSON MEDICAL COLLEGE.

BY E. Q. THORNTON, M.D.,
Demonstrator of Therapeutics.

ON account of the diversity of opinion as to the best antidote in cases of acute phosphorus-poisoning, and believing the subject needed more study, I was led to make the following experiments with the several substances recommended as antidotes to this violent poison.

The antidotes recommended in many text-books are old French oil of turpentine or sulphate of copper. Antal, of Budapest, has recently experimented with and highly recommended permanganate of potassium. Solution of hydrogen peroxide has been suggested.

Before referring to the experiments upon animals, I wish to refer to the reaction supposed to take place in the test-tube when any of the several named substances are brought in contact with phosphorus.

Old French oil of turpentine, which is acid in reaction, is said to form with phosphorus a crystalline, spermaceti-like mass, which has been called "turpentine phosphoric acid." The ordinary oil of turpentine does not bring about this change, and inasmuch as the old French oil of turpentine cannot be obtained in this market, it should cease to be considered as a practical antidote.

When a solution of sulphate of copper is poured over phosphorus, the latter becomes at *once* coated with a black deposit of copper, while phosphoric and sulphuric acid are found in the solution. The same reaction occurs *instantly* upon mixing solutions of the two substances, one grain of phosphorus reducing about four and a half grains of sulphate of copper.

Solutions of phosphorus and permanganate of potassium, when shaken together, precipitate a black oxide of manganese, phosphoric acid and phosphates being found in solution. A few drops of dilute hydrochloric acid hastens this change, chloride of manganese being formed.

The mixing of solutions of phosphorus and hydrogen peroxide results in the formation of phosphoric acid in the solution. This change takes place very slowly, but may be made to take place more rapidly by gently heating.

In the following experiments pure phosphorus dissolved in oil was administered by introducing into the stomach a catheter to which is attached a rubber tube and small funnel, and through this pouring the solution of phosphorus. The antidotes were dissolved in water and administered in the same way.

Experiment 9.—Bitch, full grown; weight, 5 kilos. At 10.30, 2 grains of phosphorus were given, followed immediately by 4 ounces of Marchand's solution of hydrogen peroxide. Severe vomiting and purging followed, unchanged phosphorus being vomited and also passed by bowels. The animal gave evidences of much pain and exhaustion; ½ grain of sulphate of morphine was given hypodermically to relieve pain. At six o'clock in the afternoon the animal was relaxed and stupid, perhaps from exhaustion and effect of morphine. Much to my surprise, I found the animal alive the following morning. Took food on the third day, and at present, three weeks after experiment, is apparently well.

Three control experiments were made. Two dogs, each given 2 grains of phosphorus, died on the first and third day. One dog, receiving 1 grain of phosphorus, recovered.

The conclusions arrived at from these experiments are as follows:

Permanganate of potassium is the best antidote for phosphorus. It must be used before the poison has become absorbed and must be well diluted (.5- to 1-per-cent. solution), or vomiting will result before the chemical reaction has taken place in the stomach. It must be given in excess, as considerable permanganate is reduced by the organic substances in the stomach.

While sulphate of copper and phosphorus are chemically incompatible, and reaction occurs instantly when they are brought in contact, it decidedly complicates a case of phosphorus-poisoning by causing severe gastro-enteritis. Any substance intended to act as a chemical antidote in the stomach must be given in ex-

Experiment 1.—Dog, full grown; weight, 6 kilos.

Time.	Poison.	Antidote.	Remarks.
12.05	1 grain phosphorus.		
12.20	.....	10 grains sulphate of copper.	
12.23	.....	.....	Freely vomiting oil, black copper precipitate, unchanged sulphate of copper, unchanged phosphorus. After having emptied stomach by vomiting, the animal continued to make *violent* attempts at vomiting, bringing up only small quantities of thick, frothy mucus.
12.45	.....	.....	Large, watery movement from bowels, containing black copper precipitate, epithelium, and blood. Attempt at vomiting, and severe straining at stools, with the result of bringing from the bowels only a small quantity of blood-streaked mucus; continued until 1.15; animal much exhausted. During afternoon there were several small black passages from bowels. Dog refused food or drink, and died the following afternoon.

Experiment 2.—Male pup; weight, 5½ kilos.

Time.	Poison.	Antidote.	Remarks.
10.48	1 grain phosphorus.		
11.16	.....	5 grains sulphate of copper.	
11.18	.....	.....	Freely vomiting oil, black copper precipitate, unchanged sulphate of copper, unchanged phosphorus. Violent attempts at vomiting, bringing up only small quantity of thick, frothy mucus.
11.26	.....	.....	Free, watery stool, changed copper, bloody mucus, epithelium bile. Continuous attempts at vomiting and purging, a small quantity of blood-streaked mucus being expelled from bowels by great effort.
12.00	.....	.....	Vomiting and purging ceased; dog much exhausted; three black movements from bowels during afternoon; animal refused food or drink, and died two days later.

Experiment 3.—Bitch, full grown; weight, 5¾ kilos.

Time.	Poison.	Antidote.	Remarks.
11.00	1¼ grains phosphorus.		
11.37	.....	5 grains sulphate of copper.	
11.40	.....	.....	Same violent vomiting as Experiments 1 and 2.
12.10	.....	.....	Same characteristic black, watery, blood-streaked stools and violent tenesmus as Experiments 1 and 2.
12.30	.....	.....	Animal ceased vomiting and purging; much exhausted; two black passages from bowels during afternoon; animal refused food or drink, and died fourth day.

Experiment 4.—Dog, full grown; weight, 6 kilos.

Time.	Poison.	Antidote.	Remarks.
	No phosphorus in this experiment.		
11.45	.....	10 grains sulphate of copper.	
11.50	.....	.....	Vomiting freely sulphate of copper, mucus, followed by violent attempts at vomiting, bringing up only frothy mucus.
11.55	.....	.....	Free greenish, watery passage, unchanged sulphate of copper, bloody mucus, epithelium, followed by violent attempts at vomiting and tenesmus, only a little blood-streaked mucus being passed. Dog much exhausted; refused food and drink same day; following day took water, but refused food until third day. Recovery apparently complete at end of two weeks.

Experiment 5.—Bitch, full grown; weight, 6½ kilos.

Time.	Poison.	Antidote.	Remarks.
12.45	2 grains phosphorus.		
1.20	.....	.....	Vomited phosphorus and oil.
1.30	.....	16 grains permanganate of potassium in *1 ounce* of water.	
1.31	.....	.....	Vomited freely.
1.34	.....	.....	Free movements from bowels, changed permanganate, phosphorus, and epithelium. Dog much exhausted, and died at 5.30.

Experiment 6.—Dog, full grown; weight, 5 kilos.

Time.	Poison.	Antidote.	Remarks.
11.20	1 grain phosphorus.		
11.45	.....	8 grains permanganate of potassium dissolved in 2 ounces of water.	
12.00	.....	.....	Vomited changed and unchanged permanganate.
12.45	.....	.....	Black, watery movement from bowels. Dog was *not* exhausted; took food and drink following day, and recovered.

Experiment 7.—Dog, full grown; weight, 6 kilos.

Time.	Poison.	Antidote.	Remarks.
12.52	2 grains phosphorus.		
1.15	.....	16 grains permanganate of potassium in 4 ounces of water.	Permanganate dissolved in 4 ounces of water.
1.30	.....	.....	Vomited changed and unchanged permanganate.
3.30	.....	.....	Black, watery stool. Dog not exhausted; took food and drink following day, and recovered.

Experiment 8.—Dog, full grown; weight, 5 kilos.

Time.	Poison.	Antidote.	Remarks.
10.30	2 grains phosphorus.		
11.00	.....	16 grains permanganate of potassium dissolved in 4 ounces of water.	Permanganate dissolved in 4 ounces of water.
11.20	.....	.....	Vomiting changed and unchanged permanganate.
12.10	.....	.....	Black, watery movement from bowels. Dog not exhausted; several black, watery stools during afternoon; recovery.

cess, so that it may come in contact with all the poisonous material; but with sulphate of copper, whether given in excess or in the same chemical proportions required to make the change, violent gastro-intestinal inflammation results.

In all cases of phosphorus-poisoning, in which sulphate of copper was used as an antidote, death resulted. Although the animal to which sulphate of copper alone was given recovered, decided gastro-enteritis resulted. I am of the opinion that it should cease to be recommended.

The animal to which the solution of hydrogen peroxide was administered recovered after poisoning by phosphorus. Unchanged phosphorus was vomited and passed by the bowels by this animal, and severe gastro-enteritis and exhaustion resulted. Peroxide of hydrogen is too slow in oxidizing the phosphorus, and too irritating upon the digestive tract to be a valuable antidote.

Inasmuch as old French oil of turpentine cannot be obtained, it should cease to be considered as a practical antidote.

DETACHMENT OF THE RETINA AND ITS TREATMENT, WITH FOUR ILLUSTRATIVE CASES.

A Ward Lecture in the Philadelphia Hospital.

By G. E. de Schweinitz, M.D.,
Clinical Professor of Ophthalmology in the Jefferson Medical College; Ophthalmic Surgeon to the Philadelphia Hospital.

DETACHMENT of the retina, by which is understood, in the widest acceptation of the term, a separation of this membrane from its organic connections with the underlying choroid, is an ocular lesion, destined in many cases to destroy, or, at all events, to vitiate materially the functions of the affected eye.

The *relative frequency* of this affection may be gathered from the statistics published by Galezowski.* This observer analyzed 152,000 cases of ocular disease with reference to this point, and found 784 detachments, or .52 per cent. of the whole number.

The *serious nature* of the disease is evident by a reference to the statistics of the causes of blindness. Thus, in the table of blindness, from idiopathic diseases of the eye, given by Magnus, and confined to patients under twenty years of age, we find among 1060 cases 27, or .84 per cent., accredited to *sublatio retinæ*. Again, in 2528 cases of blindness of both eyes, among adults and children, observed by Schmidt-Rimpler, Stolte, Uhthoff, Hirschberg, Landesberg, Bremer, Seidelmann, Katz, and Magnus,† 1696 had lost their vision from idiopathic ocular diseases, of which retinal detachment constituted 120, or 4.726 per cent. It is unnecessary, however, to confine ourselves to the European clinics for information on this point. Drs. H. F. Hansell and J. H. Bell‡ have published an excellent statistical review of the proportion and cause of blindness in 32,000 eyes consecutively treated in the Jefferson College Hospital, under the care of Dr. William Thomson; and in examining the specific causes of lost vision, irrespective of age, sex, or other relation, in the order of their frequency, have found the percentage of detachment of the retina to the whole number of blind eyes to be 2.21.

The *causes* of retinal detachment reside in various morbid conditions of the eye or surrounding orbital tissues, so-called idiopathic separation being due to an accumulation of serous fluid between the retina and the choroid, although the affection may also be occasioned by an effusion of blood in the same situation, or by the presence of a solid growth arising from the choroid, or a cystic body lying beneath the retina. The main causes may be summarized as follows: Advanced (malignant) myopia; traumatisms; effusion of blood, preceded usually by hemorrhages into the vitreous or retina; intraocular tumors; tumors and abscesses in the orbit; diseased conditions of the eye, as retinitis, cyclitis, irido-cyclitis, chronic choroiditis, hyalitis, etc.; and, finally, cases of detachment occur suddenly, in which none of the affections which have been named are present. In old people, warm baths and colds are mentioned as possible exciting causes by Schmidt-Rimpler and Becker. In the collection of cases by Galezowski,§ among 784 detachments, there were 532 men and 252 women, both eyes being affected 57 times. The causes in his cases of retinal detachment are thus enumerated: 646, myopia; 194, trauma; 13, after operations; 12, syphilis; 4, sympathetic inflammations; and 10, tumors. Nordensen's researches (to which I shall have occasion to refer again) agree with the statistics just quoted, that more men than women are affected, and that myopic refraction most frequently is present, the separation being more apt to occur in an eye in which the visual disturbance has rapidly developed. Hence one of the complications always to be dreaded in advanced myopia is detachment of the retina. Traumatism, you see, accounts for many cases; for example, the blunt force applied to the globe by the impact of a flying cork from a bottle, a piece of wood, or a raquette-ball. The immediate result of a perforating wound of the sclera, on account of extensive loss of vitreous, may be retinal detachment, or this may occur later, as the result of cicatricial contraction when the retina has become adherent to the cicatrix. An ordinary rupture of the choroid, as has been pointed out by Knapp, may in time be followed by detachment of the retina. Those retinal separations which result from operation are in one sense properly classed with traumatisms, the accident being most often seen some time after cataract extraction, especially when the wound has had a peripheral situation, and has healed with a bulging (cystoid) cicatrix. In irido-cyclitis and irido-choroiditis, the shrinking of organized exudates in the vitreous drags the retina from the choroid, and in many blind and atrophied eyeballs, after removal, a funnel-shaped detachment of the retina is found. This is well illustrated in

* *Recueil d' Ophthalmologie*, 1888, p. 151.
† Quoted by Noyes, "Diseases of the Eye," p. 700.
‡ *Archives of Ophthalmology*, vol. xxi. p. 51.
§ *Loc. cit.*

this drawing taken from Wedl and Bock's atlas, and also in the specimens which I exhibit.

A number of theories have been propounded to explain the *mechanism* of detachment of the retina, and although its pathology is not definitely settled, it may be stated that all cases of idiopathic separation are preceded by a change in the pressure exerted by the vitreous upon the retina (whereby this membrane is kept in place against the choroid), and it is highly probable that this change consists in detachment and shrinking of the vitreous.

It would be interesting to trace the different views which have been held in regard to the pathology of detachment of the retina, but as time scarcely permits an extended review of this character, I will refer briefly to the *résumé* given by Schoeler. Before the time of Heinrich Müller much weight was attached to what is known as the "secretion theory,"—namely, that the phenomena of separation of the retina depended in some way upon an anomalous secretion of fluid. In 1856, however, Müller taught that filamentous or membranous opacities in the vitreous, by contracting, might detach the vitreous body alone, or being attached to the retina, this might follow the shrinkage, and thus cause separation of this membrane from the choroid. In 1867 Iwanoff, on the basis of anatomico-pathological investigations, demonstrated that disease of the vitreous body tended to produce detachment of the vitreous, and that the latter condition was a forerunner to retinal detachment. In 1870 De Wecker suggested that the fluid found in the subvitrinal space after detachment of the vitreous succeeded in passing behind the retina through a rupture which took place in this membrane. Working upon these lines, Leber, in 1882, and Nordensen, in 1887, have developed the most satisfactory explanation which is given of retinal detachment. The first process is a fibrillar change in the vitreous which leads through shrinking to detachment of the vitreous body, and by extension of the lesion to the equator of the ocular globe, where the retina is most intimately connected with the vitreous, the tension causes a rent in the retina behind which passes the fluid which has gathered between the detached vitreous body and the retina. Now, it is not always possible to find this rent, although Nordensen, whose research goes far to confirm the explanation given by Leber, found the tear in nearly forty per cent. of the cases in which he looked for it. No doubt it was present in many others, but escaped observation owing to opacities in the media, or because it was far in the periphery of the fundus. The primary cause of the pathological change in the vitreous, which thus shrinks and occasions traction, is believed by Nordensen to be disease of the choroid and ciliary body; hence the greater liability of this accident in eyes affected with advanced and progressive myopia.

The *objective symptoms* of detachment of the retina, as furnished with the ophthalmoscope in the direct method of examination, consist in an alteration of refraction at the area of separation, the surface of the elevation thus produced being out of focus as compared with the rest of the eye-ground. The detached retina appears as a gray or bluish-gray membrane, stretching forward into the vitreous, and containing folds which give rise to a sheen. The intervening furrows present a greenish-gray reflex, and the whole trembles with the movements of the eye. When the underlying substance is solid, however, neither folds nor tremulousness are present. Not uncommonly it is possible to demonstrate rents in the detached retina, through which the dull color of the choroid is readily visible. The importance of these in regard to the mechanism of the affection has already been pointed out. In extensive detachment of the retina, the membrane may have floated so far forward in the vitreous that it is possible to see it even without the aid of an ophthalmoscope. The retinal vessels present characteristic features. First, they lose the light streak, and finally appear as dark, tortuous cords, often smaller than the normal size, and when they are folded backward, they pass out of focus at the edge of the detachment, which is often sharply marked from the normal fundus. Indeed, there may be a yellowish border and occasionally accumulated pigment. Naturally, the discoloration of a detached retina depends upon whether the case is recent or not, and upon the character of the underlying substance. In the earlier stages the transparency is not lost, and the gray color previously described is not present. The detachment is either partial or complete, and may occupy any portion of the fundus, but most commonly is found below, even when it has begun in the upper part. Detachments in the form of a series of furrows are sometimes found, and also circular circumscribed separations. Occasionally, the subjective symptoms of detachment are present, although the ophthalmoscope fails to reveal any elevation in the retina. Over this area, however, as Loring has pointed out, there is complete loss of the light reflex from the retinal vessels. Unless the macular region is directly involved, vision is

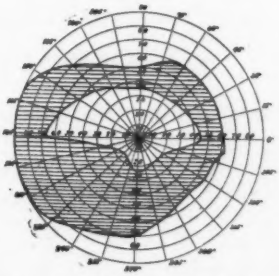
not obliterated, although there is always more or less interference with sight. This may suddenly, or, like the detachment itself, may arise slowly.

The *field of vision* is lost in an area corresponding to the detached retina, the completely darkened portion often being bordered by a zone of imperfect vision, which corresponds to an area of the retina not yet separated, but elevated above the normal plane. If the retina is detached below, the upper portion of the field is obliterated; if above, the lower; and so on. Occasionally disturbances in the visual field are not present in the early stages of retinal detachment, because the recently-detached retina retains its function; hence the restriction of the field may escape observation, unless, as Berry suggests, the examinations be made with subdued light.

The *objective symptoms* of this affection consist in a distortion of objects, floating spots before the eye due to frequent vitreous opacities, an appearance like a cloud due to the scotoma produced by the separated area, and sometimes phosphenes.

There is very little difficulty in making a diagnosis of extensive detachment of the retina by attending to the symptoms which have already been described, and if the media are sufficiently clear, the ophthalmoscope is usually an all-sufficient method of investigation. When the vitreous is full of opacities, however, or when the detachment of the retina has occurred in connection with irido-cyclitis, and the inflammatory products have blocked the pupil and rendered ophthalmoscopic examination impossible, the field of vision gives the

FIG. 1.



Field of vision of a case of chronic irido-cyclitis, with detachment of the retina.

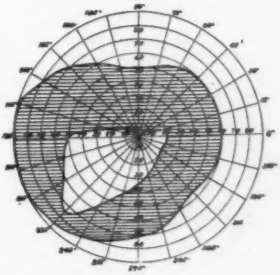
best information. This is well illustrated in the diagram which I present to you taken from a case of chronic irido-cyclitis and probable detachment of the retina.

It is not always easy, however, to make a differential diagnosis between detachment of the retina and sarcoma of the choroid, or, indeed, any intraocular growth. The points upon which a differential diagnosis are based are the following: In choroidal sarcoma the defect in the field of vision is more sharply circumscribed, the central vision less decidedly affected, and the overlying retina exhibits no tremulousness. Moreover, the tension is apt to be diminished in detachment of the retina and raised in intraocular growth. None the less, errors in this respect have not infrequently been made, and more than one acute diagnostician has hesitated for a long time between the diagnosis of idiopathic retinal detachment and choroidal sarcoma.

To illustrate the subject which we are discussing, I present for your consideration four cases of detachment of the retina.

CASE I.—Mary S., a woman, aged thirty-eight, about two years ago suddenly experienced a cloud before the left eye, and on testing in a rough way her own vision, found that it was materially reduced or practically absent in this eye. Presumably the detachment of the retina, which you can see with the ophthalmoscope, happened at this time. About a year and a half ago she was under treatment in the

FIG. 2.



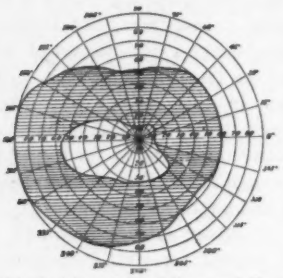
Field of vision of Case I., left eye.

Philadelphia Polyclinic, but without material benefit. The right eye is not far from normal, being slightly hypermetropic in refraction. In the left eye, also hypermetropic, there is a huge detachment of the retina, the whole lower half of this membrane being separated, floating forward in the vitreous as a grayish-green membrane at an elevation of 7 or 8 D. This diagram illustrates the field of vision, the outer continuous line marking the boundary of the normal visual field, the shaded area where vision was lost, and the inner white area that portion of the field which is still preserved, representing the extent of retina which is still functionally active and in place.

CASE II.—Franz G., a young man, aged twenty-two, born in Germany, states that as

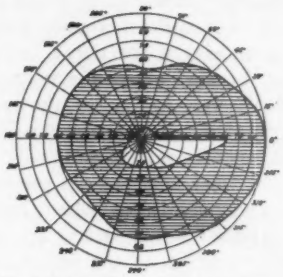
long as he can remember he has never seen well. There is no history of blindness in his family. He has suffered from rachitis, and now has well-marked phthisis of the left apex. In 1890 he consulted Duke Carl Theodore, of Bavaria, and Berlin, of Stuttgart, and underwent two operations, probably scleral punctures, to the method of performing which I shall presently refer. The vision of each eye is extremely poor, fingers being counted with difficulty in the lower field. In the right eye the cornea is clear, the disk is oval, gray, and at its outer margin there is a slight crescent of choroiditis. There is a huge detachment of the retina not far from complete in the right eye, and nearly complete in the left. The greatest height of the detachment is + 7 D, and the undetached patch of retina in the right eye shows evidences of slight choroiditis. In the left eye the disk is oval, the veins very large, and there is a similar but not quite so extensive detachment of the retina, the greatest height of which is 5 D. There are no demonstrable vitreous opacities. The accompanying diagrams, constructed on the plan previously described, show what a very small portion of the field remains and how very near the macula the lesion has progressed.

FIG. 3.



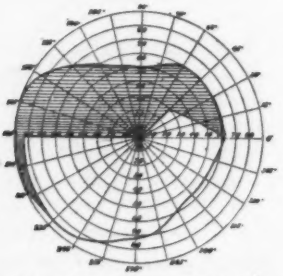
Field of vision of the left eye of Case II.

FIG. 4.



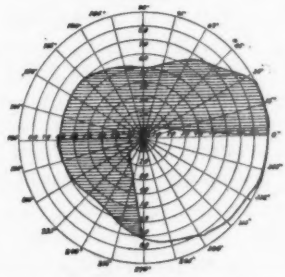
Field of vision of the right eye of Case II.

FIG. 5.



Field of vision of the left eye of Case III., taken with two candles.

FIG. 6.



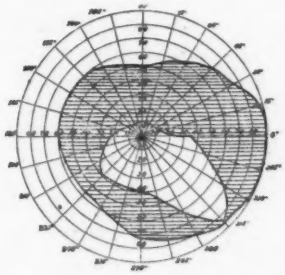
Field of vision of the right eye of Case III.

CASE III.—Charles A., a man, aged twenty-five, American by birth, states that up to the thirteenth year he had good eyes. Then he experienced an attack of chorea, after which the vision was poor, and he attended Wills Hospital under the care of Dr. Harlan, being an in-patient for about six weeks, and afterwards an attendant at the dispensary service for a number of months. Improvement occurred, because he was able to go to work, but after ceasing his attendance at the hospital, he did nothing for his eyes except to visit an irregular practitioner, who promised to cure him by furnishing him with glasses. Gradually the disease progressed, and finally his eye-sight became so deficient that in January of last year he entered the hospital. His condition then was very much as it is now, and did not improve under the medicinal treatment, which I shall presently describe. He declined operative interference, and, indeed, it does not appear to be a case in which much hope could be extended from this source. In the right eye he can barely count fingers in the lower and outer quadrant of the field, and in the left eye he has light perception in the lower portion of the field. There is extensive detachment of the retina, so that in the right eye, as you see from the diagram, there remains only a very small portion of vision in the lower and outer quadrant of the field. In the left eye it is possible to determine the field of vision with can-

dles, one being used for fixation and the other for the test-object, and you see that light perception is present only in part of the lower half of the field. In both eyes the detachment involves the macular region. With the ophthalmoscope an extensive detachment of the retina is evident, which floats up in the vitreous, spots of choroiditis being evident in the portion not yet detached, while the vitreous is full of floating opacities. This is an extensive state of disorganization, offering very little hope so far as remedial agents, either operative or otherwise, are concerned.

Case IV.—Hugh M., a man, aged fifty, presents an interesting state of affairs. The right eye was injured by a blast twenty-four years ago, and was considered by the patient to be valueless until his left eye was affected. Now it is the more useful organ of the two. There is an irregularly oval pupil, with adherence of the iris to a small scar in the cornea, and a separation of the iris at the outer ciliary margin. Over the cornea are scattered several cicatrices. The remains of the capsule of the lens is seen to border the pupillary margin. It is not possible to obtain a view of the fundus, but from the diagram of the field of vision, which I present to you, you observe that probably there is detachment of the whole lower half of the retina, with concentric restriction of the field of vision furnished by the unseparated area. Fortunately, however, the macular region is not involved, and with a cataract-glass the patient's visual acuity is $\frac{20}{cc}$.

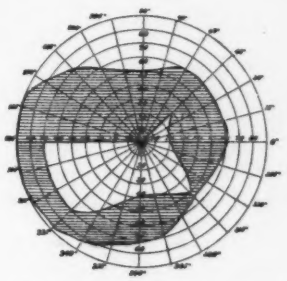
Fig. 7.



Field of vision of the right eye of Case IV.

The sight of the left eye was good until July, 1891, and then, while he was working, sudden blindness occurred. There has never been pain nor inflammation. He consulted Dr. Sutphen, of Newark, N. J., who has very kindly furnished me with an account of what he did for the patient at this time. He was ordered to bed and treated by injections of pilocarpine, and later iodide of potassium was administered internally. There was steady increase in the detachment until it became total, and scleral puncture was made upon the left eye December 1, 1891. There was no reaction whatever from the operation, except slight œdema of the conjunctiva, which lasted three days. Material improvement in vision was noted from the second day following the operation. The patient remained in bed three weeks, and left the hospital January 15, 1892, with the retina in its normal position and vision $\frac{20}{30}$. The patient states that, contrary to Dr. Sutphen's orders, he went to hard work, and very speedily his sight became as bad as ever. He declares that he was ashamed to go back to consult Dr. Sutphen, and well he may have been, because, owing to his own foolishness and disobedience, the benefit of Dr. Sutphen's excellent treatment was lost, and there has been a return of the disease, so that there is now an extensive detachment of the retina, which has involved the fixing-point. The disk, which is visible, is oval, and contains a small, central excavation, with a dot of pigment upon its margin. The detached retina floats up as a gray veil in the vitreous, which, in its turn, is filled with opacities, the lens is hazy, and there are considerable cortical opacities in the crystalline lens downward and inward. The accompanying diagram exhibits the field of vision, and was obtained by causing the patient to fix upon a candle placed at the centre of the perimeter, while a large, white test-object was utilized to map out the field.

Fig. 8.



Field of vision of the left eye of Case IV. Test-object a candle-flame.

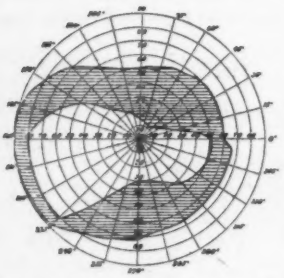
These cases serve to illustrate the affection which we have been discussing this afternoon, and also to introduce the concluding remarks in regard to the *treatment*, which naturally divides itself into non-operative or medical treatment, and operative interference.

In former times many of the patients were subjected to the severe, so-called *antiphlogistic regimen* which was so much in vogue,—namely,

free bloodletting from the temple, either with leeches or wet-cups, sinapisms, drastic purges, active foot-baths, and even setons. Pursuing the same line even at the present time, derivative medication has been largely employed, and many cases of detachment of the retina, in addition to this, have received full doses of iodide of potassium and mercury, either by the mouth or by means of inunction, with the hope of absorbing the subretinal fluid, very much on the same principle as it was hoped to influence an effusion into the pleural sac.

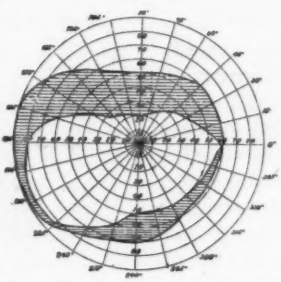
Less depressing, but requiring a great amount of patience on the part of the sufferer, is what

FIG. 9.



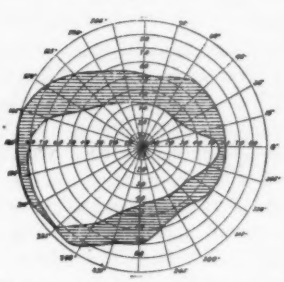
Field of vision in a case of retinal detachment before the use of eserine.

FIG. 10.



Field of vision after one month of eserine-instillations.

FIG. 11.



Field of vision after five weeks of eserine-instillations.

may be called the *rest-cure* for detachment of the retina. This consists in placing the patient on his back, giving him an almost entirely liquid diet, chiefly composed of milk, and keeping both eyes closed with a pressure bandage. In a few instances this method has been followed by good results, and there has been reattachment of the separated membrane; but, like all other procedures connected with the treatment of detachment of the retina, it has a long list of failures to its credit.

In some instances, especially on the recommendation of Guaita, there has been amelioration of the symptoms of retinal detachment and increase in the field of vision under the influence of eserine instillations, although there was resumption of the symptoms upon ceasing the use of the drug. In several cases under my own care I tried very faithfully this use of eserine, adding to it at times a pressure bandage, but not confining the patient to bed. In one instance small doses of iodide of potassium were also taken, but only for a short period of time, and probably not in sufficient dose to influence the progress of the disease. The accompanying diagrams illustrate what effect was produced by this method in one case, and you observe there was slight increase in the size of the field of vision. Central vision, however, did not improve.

A third form of treatment may be characterized as the *diaphoretic method*. In this the patient is confined to bed, either with or without a pressure bandage, and, according to his power of endurance, freely sweated with hypodermic injections of pilocarpine, alternating sometimes with the administration of salicylate of sodium. This treatment has much to commend it, and there are numbers of cases on record in which decided improvement has occurred. It should be remembered, however, that not every patient is able to withstand the depressing influence of exhausting sweats, and very often, in the hope of reattaching a separated retina, undue depression of nutrition has been produced by the vigorous measures employed. It is, however, a method which should be thought of first of all, and in suitable cases should always be employed, as we have the experience of many observers for encouragement; for example, Roosa reports that in the Manhattan Eye and Ear Hospital, in quite a large proportion of cases, good results have been obtained from the rest-, bandage-, and pilocarpine-treatment.

A number of *operative procedures* have been devised; for example, sclerotomy (Wolfe, Abadie), iridectomy (Dransart, Brettremieux), methods which, although they have a few cures to their credit, are generally condemned. Naturally, most of the attempts have been towards the evacuation of the subretinal fluid by puncturing the sclerotic, as was originally suggested by Sichel in 1859. At one time after the puncture De Wecker suggested drainage of the subretinal fluid by the introduction of a gold or catgut thread. Aspiration without drainage has been practised by Galezowski, and Graefe, in some instances, entered the globe with a broad cataract-needle at the side opposite the detachment, cut into the retina from the vitreous, and allowed the subretinal

fluid to pass into the vitreous body. Galvanopuncture was at one time proposed by Abadie, the puncture being made backward from the ciliary region. In fresh cases, but not in old ones, some good results were reported. This method has quite recently been advocated again by some French surgeons.

In a number of instances, in addition to scleral puncture, irritating fluids—for example, Condy's fluid and tincture of iodine—have been injected with the hope of producing adhesive inflammation. The cure of retinal detachment by the injection of iodine into the subretinal space received a great impetus after the publications of Schoeler, in Berlin, who reported a number of successful cases. Soon, however, other operators who tried the method recorded examples in which destructive inflammation followed the method, with complete loss of the eye; and in a valuable series of cases reported by Dr. Bull, of New York,—valuable because they seem to show very conclusively the danger of the method,—Schoeler's injections of iodine were proved to be of no value. Perhaps experience with this measure is not sufficiently great to condemn it entirely, but it is not enough to recommend it as a therapeutic measure free from danger.

Scleral puncture may be recommended as the method least likely to do harm, and perhaps most likely to do good, but only after a thorough rational medicinal treatment has been employed. The precise position of the retinal detachment must be ascertained, the eyeball is rotated in a suitable direction, a narrow Von Graefe cataract-knife is thrust directly through the sclera and choroid, turned slightly upon its axis, and the subretinal fluid allowed to drain away beneath the conjunctiva. Very little reaction follows, and, as in the case quoted from Dr. Sutphen, good results will sometimes follow. Great care should be taken to perform a perfectly antiseptic operation, and, as Dr. Sutphen suggests, the rotation of the eyeball back to its normal position when released by the fixation forceps, virtually converts the scleral wound into a subconjunctival one, and this appears to be advantageous in preventing infection.

Hugh M., the case to which I have already called your attention, has implored me to repeat the operation which more than a year ago, when performed by Dr. Sutphen, was productive of good results. It does not seem to me to hold forth much hope now, but, as experience shows it can do no harm, I will perform for you the operation of scleral puncture. I seize the eyeball with fixation forceps, rotate it inward, and thrust a Graefe cataract-knife through the sclera between insertion of the external and inferior rectus at about the equator. I now turn the knife slightly upon its axis, the wound gapes, and you see the escape of serous fluid, which forms a good-sized bleb beneath the conjunctiva. A double figure-of-eight bandage is applied, and the patient put to bed.

A very interesting *résumé* of the methods of treatment of detachment of the retina has been published by Emil Grosz.* After gathering together his statistics from the reported cases of the various procedures, he finds that in sixty-five per cent. of the cases puncture of the retina, in forty-four per cent. puncture of the sclera, in sixty-six per cent. iridectomy, and in fifty-nine per cent. pilocarpine injections remained fruitless. He holds, however, that these results are not trustworthy, because most of the authors were satisfied with an indefinite expression of improvement without careful investigation of the visual acuity and the duration of the improvement. In contrast to these statistics, he gathers together those from the Ophthalmic Clinic of Professor Schulek, in Buda-Pesth. In the last fifteen years 6971 cases were treated, and 67 of these were affected with retinal detachment. The various methods and the results are thus summarized:

1. Puncture of the sclera in 21 cases, with negative result 14 times, improvement 4 times, and deterioration three times.

2. Iridectomy in 18 cases, with negative result 7 times, improvement 6 times, and deterioration 5 times.

3. Puncture of the retina in 2 cases, with negative results in 2.

4. Pilocarpine injection in 16 cases, with negative results in 10, and improvement in 6.

5. Combined puncture of the sclera and pilocarpine injection in 9 cases, with negative results in 6, and improvement in 3.

6. Iodine injections, after the method of Schoeler, in 2 cases, with negative results in 2.

Improvement, therefore, was obtained with pilocarpine injections in thirty-three per cent., iridectomy in thirty-three per cent., puncture of the sclera in twenty per cent., combined pilocarpine injection and puncture of the sclera in thirty-three per cent. He naturally concludes from these statistics that pilocarpine injections should be considered first of all, then iridectomy, and afterwards puncture of the sclera. Iridectomy should be first performed because, after an

* Abstract in Nagel's "Jahresbericht für Ophthalmologie," vol. xxi. p. 95.

improvement in the circulation of the globe, there is more probability of absorption or drainage of the subretinal fluid. No doubt all of us agree that pilocarpine injection should receive the first place in our methods of treating this disease, but most of us do not accord the second place to iridectomy, but, as I have already stated, prefer puncture of the sclera in the manner just performed.

PHENATE OR CARBOLATE OF COCAINE AS A LOCAL ANÆSTHETIC.

By D. B. Kyle, M.D.

Assistant Demonstrator of Pathology in the Jefferson Medical College.

THE need of a good local anæsthetic from which there is no danger of oversystemic action has long been felt by the medical profession.

Probably no better drug than the muriate of cocaine has been produced, but it is open to the one serious objection that when applied to cut surfaces it produces dangerous systemic action, endangering the life of the patient, and in a limited number of cases causing death.

Believing the combination of carbolic acid and cocaine to be an excellent one theoretically, from the fact of both possessing anæsthetic properties, and the former one of the best known antiseptics, the writer decided to test the practical use of the drug.

The phenate of cocaine is one of the many preparations by Merck. It is described as a slightly-colored substance, of the consistence of thick honey, which readily melts when heated, and containing seventy-five per cent. of the cocaine alkaloid.

It is soluble in alcohol of from thirty to fifty per cent., the solution having a faint odor of carbolic acid.

The dose of the drug is from $\frac{1}{12}$ to $\frac{1}{6}$ grain, repeated every four hours. Locally, it is applied in solutions varying from one to ten per cent.

How much the antiseptic properties of the carbolic acid are affected by the chemical combination we leave open for discussion, suffice to say that the solution was applied to cut surfaces in which no other antiseptic was used, and in all cases the results were equally as good as in those where such solutions as peroxide of hydrogen or carbolized benzoninol were used.

As to the antiseptic properties, some few tests have been completed and others are being carried on.

These tests confirm the statement that the combination still possesses antiseptic properties, but not equal to the carbolic acid alone.

It is the writer's belief that it at least retards the growth of micro-organisms.

As a local anæsthetic, the power of cocaine is very great over limited areas. This is especially true when applied to mucous membranes. Applied to such structures as the Schneiderian membrane, the mucous covering of the glans penis, or by hypodermic injection, it causes limited blood-supply by contraction, and produces temporary anæsthesia.

If applied to the tongue, it temporarily perverts both taste and tactile sensibility. Applied to the ocular conjunctiva, it not only produces profound anæsthesia of this membrane, but causes dilatation of the pupil, partial paralysis of accommodation, enlargement of the palpebral fissure, slight lachrymation, and often temporary ptosis.

The physiological action of the phenate of cocaine is practically the same, at least as far as the writer has been able to test.

It might be best to state that the writer's experience with the drug has been limited exclusively to throat and nose work.

In testing its anæsthetic properties, ten different solutions were used, ranging in strength from one to ten per cent., the six- and eight-per-cent. solutions answering as well for all operations as the nine and ten. The applications were limited to the nasal and pharyngeal mucous membrane.

For thermo-cautery application in follicular or granular pharyngitis, where the burning is superficial, the two- to four-per-cent. solution gave equally as good results as the higher ones. The one- and two-per-cent. solutions were not satisfactory; for prolonged operations and those involving deeper tissue the stronger solutions must be used.

As a local anæsthetic, I have used the drug in twenty-four separate cases, as follows: Four cases when removing the hypertrophied inferior turbinated bone by means of saw and cautery snare; two cases of exostosis of septum removed by saw and knife; five cases of enlarged tonsils reduced by thermo-cautery; three cases of follicular pharyngitis treated by puncture with cautery needle; two of adenoid vegetations at the vault of the pharynx treated by flat, curved cautery-blade; three cases of hypertrophic rhinitis; one case of hay fever, on which I operated for hypertrophied turbinated bone; and four cases of nasal polypi.

In each of these cases I kept a record of the number of times applied and length of time before anæsthesia was produced.

Various theories are advanced as to how phenate of cocaine acts, whether by the paralyzing of the terminal twigs of the sensory nerves, or by vaso-motor action, rendering the nerves bloodless, and thereby rendering them unable to transmit sensory impressions.

However, this we will leave each to his own belief; we know it acts as a local anæsthetic.

Combined with the aqueous extract of witch-hazel, it is an admirable astringent not only in hemorrhage but in acute catarrh.

In one case of exostosis of the septum and two of hypertrophied turbinated bone, the anæsthesia was not satisfactory, as is usually the case when cutting of the bone or where deep tissue is involved; the same can be said of the muriate of cocaine.

The length of time to produce anæsthesia is somewhat longer than that required for the muriate; but, when once produced, it is more lasting. In the twenty-four cases reported, the average time was seven minutes, the total number of applications at different sittings being one hundred and fifty.

The astringent properties of cocaine are well known.

Having used the aqueous extract of witch-hazel with success in cases of nasal hemorrhage, I used this in making the test solutions.

As the phenate of cocaine is insoluble in the witch-hazel, I first dissolved it in alcohol, then added this to the witch-hazel.

An equally good combination is phenate of cocaine thirty grains, menthol fifteen grains, to one ounce of witch-hazel. This is, however, open to the objection of the bad after-effects of menthol, first causing contraction of the blood-vessels, which is afterwards followed by congestion, with decided irritation of the mucous membrane.

In comparing the phenate with the muriate of cocaine, I believe it to be as good a local anæsthetic, and in none of the one hundred and fifty applications of which I kept record, and I feel safe in saying as many more of which I kept no record, did I have symptoms of cocaine-poisoning, nor did the patient complain of any bad after-effect.

Yet in three cases there was cardiac disease and in one albuminuria. These conditions are known to be especial contraindications for the use of the muriate.

As an antiseptic, I believe it equal to any carbolized solution usually used in nasal operations.

It can be safely used on cut surfaces, which, in using the muriate, is to be carefully avoided.

It is superior to the muriate in the fact "that it coagulates the albumin in the tissue, preventing the absorption of the cocaine, thereby prolonging the anæsthetic effect, and lessening the danger of systemic poisoning" (Hare).

Dr. Isador Gluck has for several years added carbolic acid to solution of muriate of cocaine for the purpose of avoiding the after poisonous effects.

Dr. Roberts Bartholow also states that phenol added to muriate of cocaine will lessen the danger of systemic poisoning.

Dr. Von Oefele uses the drug exclusively in the place of the muriate, locally, internally, hypodermically, and in powder.

For operations involving the deeper tissue, the drug must be used hypodermically, the eight-per-cent. solution usually producing sufficient anæsthesia. The alcoholic solutions give better results, but are more irritating.

While we must not draw too positive conclusions from these few cases reported, yet the results are such as to justify its use in minor surgery.

PIPERAZIN IN THE TREATMENT OF STONE IN THE KIDNEY—REPORT OF CASES.

By David D. Stewart, M.D.,
Lecturer on Clinical Medicine in the Jefferson Medical College.

PIPERAZIN, as is perhaps now generally known, is one of the more recent coal-tar derivatives. It is chemically diethylene-diamine, a piperadin in which one CH_2 group is replaced by an amide. It is freely soluble in water, and in cold aqueous solution will dissolve twelve times as much uric acid as will lithium carbonate. Its urate, which is said to be always a neutral salt, is seven times more soluble in water than is the corresponding salt of lithium, the most soluble of the metallic urates. Piperazin is a stable compound, apparently not undergoing decomposition in the organism. It is readily excreted by the kidneys, and may be detected in the urine by appropriate tests in a few hours after a single dose. The knowledge of the latter of the foregoing facts has led naturally to a wide clinical trial of piperazin in the uric acid condition, especially in gout and in uro-lithiasis, with a pretty general unanimity of opinion as to its value in uric acid gravel and calculi, although curious contradictory results are reported as to its influence upon the quality and quantity of urine. It was with a view of testing its action in cases of uro-lithiasis, and concurrently to ascertain for myself its influence upon nitrogenous excretion in the urine, that I began its trial in a number of cases of uric acid diathesis,

of which I shall now only report several of suspected renal calculus in which a careful clinical examination of the remedy over quite a lengthy period was made, with accompanying thorough microscopic and chemical examinations of the urine.

It goes without saying, from what is known of the action of piperazin, that, of all conditions, uric acid gravel and stone is the one most likely to receive substantial benefit from its use. Despite the affinity of piperazin for uric acid, and the extreme solubility of its urate, little can be expected from it in uratic chronic multiple arthritic enlargement, at least in the doses generally administered,—15 grains daily. In much larger amounts, such as a drachm or two daily, exhibited over a continuous time, more promising results may be anticipated; whether, however, such doses will be tolerated without injury is yet to be determined. The present unfortunately high price of the drug prevents the determination of this question.

The first of these cases of uro-lithiasis is Miss L. F.,* aged twenty-eight, who came under observation February 12, 1891, with a history of an almost continuous ache in the right loin for seven to ten months. Paroxysms of pain at times occurred, shooting towards the bladder. She had been passing gravel more or less continuously for several years. There were anorexia, constipation, bad taste, leucorrhœa, painful menstruation, and severe headache occurring about twice weekly. She was in a melancholic condition; was persistently low-spirited, the latter, doubtless, being induced somewhat by the recent death of her favorite cousin from a somewhat similar ailment. Her urine then was noted to be highly acid, of a specific gravity of 1028, and to contain neither albumin nor sugar. Microscopically, there were numerous crystals of ammonium urate, large excess of free uric acid, and microscopic (good-sized) calculi of both ammonium urate and uric acid. There were also amorphous urates, a few pus-cells, red blood-corpuscles, and epithelium from the kidney's pelvis and from the bladder. There was then present deep-seated tenderness in both flanks, but no palpable tumor. She was placed upon large doses nightly of nascent potassium citrate, was given hot water freely before breakfast, and was directed to take liberally of an alkaline mineral water through the day, and to live in the open air.

From the date of the first visit she was under observation quite constantly, with the exception of an occasional interval of about two months, until piperazin was begun in January, 1892. In the early part of this period her general condition improved somewhat under remedies directed to assisting the impaired digestion and the use of arsenic after meals. The vegetable salts of potassium were given for a number of months in very full doses, intermittently. A lithia-water was also taken freely. Potash could not be continued for any length of time, from the almost invariable gastric derangement it occasioned. During this period frequent chemical and microscopic examinations of the urine were made. The result of these was similar to that above recorded. Pus- and red-cells were never present in large amount, nor could pus even be detected by Donné's test. Crystals of uric acid and urates were usually present in huge excess, and occasionally calcium oxalate abounded. Cells from the kidney pelvis were common, and on several occasions hyaline and granular casts were seen. The daily quantity of urine was subnormal,—about 1½ pints, and often but 17 to 18 ounces,—unless considerable doses of potash or large quantities of fluids were taken. The urea was always low, on several occasions averaging between 142 and 216 grains. Attacks of gravel were very frequent, but were usually dissipated by potash, to promptly return on its discontinuance, despite care in diet and attention to general hygiene. For this reason and because of the disorder of digestion full doses of the alkalies occasioned, she, after a few months, abandoned their use, and then symptoms of stone in the kidney became more pronounced. There was constant severe pain in the loin, with increased tenderness on pressure, and growing fulness, dulness, and resistance in the flank. Professor Keen at this time saw her with me, agreeing as to the probable existence of stone, and advised a nephrotomy. To this consent could not be obtained. I now lost sight of the case for several weeks. During this time she took a great deal of lithia-water, but no drugs. Early in January, 1892, when I again saw her, the symptoms were those of calculus hydronephrosis. She was passing less than 2 pints of urine daily, and often scarcely a pint. There was prominence, tenderness, and dulness in the left hypochondriac and iliac regions, the dulness extending towards and near the umbilicus, and, posteriorly, to the usual situation of the kidney. I now began a brief trial of two

* A cousin of the patient upon whom a nephrotomy for calculus pyelonephrosis was done by Professor Keen, and reported by us in the THERAPEUTIC GAZETTE, January 1, 1892. These two young women strikingly resembled each other in appearance, disposition, and temperament.

drugs,—diuretin and piperazin,—a barren result with which, I informed her, would necessitate immediate operative interference. Diuretin was first prescribed, principally because she was then suffering greatly from migranous headache, which, it was thought, diuretin would relieve. Little was expected from either it or piperazin on the kidney condition. About a drachm daily of the former was taken for a week or ten days, totally without effect on the urine. Piperazin was now ordered in doses of 15 grains daily. The issue of the use of this remedy seemed quite extraordinary, so promptly and decidedly did benefit accrue. The urine, which had been unaffected in amount by diuretin, after taking piperazin for three or four days, underwent a most decided increase; from but a pint daily it rapidly rose to 4 pints. When seen on February 27, 1892, she had been taking piperazin for over two weeks. There had been voided in the preceding nine hours 5 pints, a much greater quantity than she is aware of passing before or since.* The loin-pain was much diminished, and the fulness and dulness occupied a much less area. Her general condition in the two and a half weeks had also undergone a striking improvement, noticeable to all. Appetite and digestion were asserted to be better than for several years,—the bad taste to have disappeared; in short, she looked better and felt generally improved, an amelioration, doubtless, largely of psychical origin, contributed to by the feeling that her condition was no longer one of desperation. No minute examinations of urine were possible immediately preceding the administration of piperazin, her condition not admitting of delay in its use; nor was any attempted directly after she was seen on this occasion, it being intended, after the condition had ameliorated sufficiently to allow discontinuance of the drug for a time, to undertake systematic examinations. To my regret, also, it was impossible to keep a continuous record of the daily amount of urine passed from the time piperazin was first begun; this was, however, done subsequently, on starting anew with the remedy, after its temporary withdrawal. From February 12 to April 2 (the last, one of the dates of temporary discontinuance) the daily dose was from 12 to 20 grains, usually the latter. The daily quantity of urine was always fair and often large. She was careful, by direction, to take the same amount of fluid daily, averaging about 1½ pints, not including that in the food eaten. On March 10 the amount passed was 65½ fluidounces; specific gravity, 1010; faintly acid; urea, 300 grains. March 11 to 15, the amounts were 61, 70, 59½, and 70 fluidounces. March 16, 50 fluidounces, faintly acid; specific gravity, 1020; urea, 500 grains; uric acid, 17 grains.† March 17 to 23, the amounts were 62, 47, 63, 64, 62, 54 fluidounces. March 30 and 31, 51 and 53 fluidounces.

Piperazin was discontinued from April 2 to 13. During the period of seven weeks in which the drug was taken, improvement continued, though not so markedly as at first. Pain, or a sensation of soreness in the loin, persisted; much slighter, however, than formerly, and little tenderness was induced by pressure over the area of fulness and dulness in the lumbar region. This last was now present in moderate degree only.

The subjoined table gives the consecutive daily specific gravity and quantity of urine, and also the variations in its most important nitrogenous constituents, estimated from mixed twenty-four-hour specimens, prior to and following the administration of piperazin.

In all estimations in this paper the acidity, urea, and uric acid were obtained by the following methods: The acidity was estimated by titration with a $\frac{N}{10}$ solution of NaHO; titrations were made as early as possible after receiving the specimens, which were usually sent promptly after mixing at the expiration of each twenty-four hours. Urea was estimated by the hypobromite process (bromine itself being always used), with the apparatus of Parke, Davis & Co. Uric acid was estimated by the now well-known and reliable method of Haycraft; as with the urea estimations, a second of uric acid was often made to confirm the first.‡

Microscopic examinations were made between April 8 and May 9. In all specimens there were an abundance of amorphous urates, free uric acid and ammonium urate crystals, large

* The passage of this large amount, under the conditions narrated, can only be explained by the giving way of a hydronephrosis.

† Within these dates other urea examinations were made, but as the urine was partly decomposed, the results were considered untrustworthy, so are not here recorded. A number of other uric acid estimations were also made, but by a method the technique of which was afterwards proved faulty, so that no account is here taken of these.

‡ No account of the daily elimination of urinary solids is here appended, as these may be readily approximately estimated by multiplying the last two figures of the specific gravity of the urine by 2.33 (Christison's formula), or by 2 (that of Trapp's). This equals the percentage in grammes calculated on 1000 cubic centimetres.

quantity of granular *débris*, and epithelium from the kidney and bladder.

The urine was not examined from this on. An estimation of the amount passed in the twenty-four hours, however, was still frequently made. From May 12 to 24 the daily quantities were in fluidounces 47, 44, 36½, 55½, 49½, 56½, 44, 43, 42, 48, 53, 50, 50. During the second half of June and the early part of July similar counts were made, which it is needless to reproduce here, since they deviated very little from the foregoing, like them being quite normal.

Piperazin was continued in daily quantities of 20 grains until August 1. It was then withheld, it being concluded that the patient had entirely recovered. Four weeks succeeding its discontinuance the urine was measured for four consecutive days. The amounts were, in fluidounces, 50, 52, 48, 47. All loin-pain and discomfort to manipulation in the renal region had completely disappeared when the patient was examined on June 3, and had not since reappeared when last seen, on October 1, 1892, though she was leading a most sedentary life and taking little or no exercise in the open air. When the abdomen was last thoroughly examined, in June, resistance and dulness were still present in a limited portion of the situation previously occupied by the hydronephrosis, but no tenderness, even on deep pressure, could be elicited in this region. No gravel has been noticed in the urine at any time from the date of commencement of piperazin, though looked for by the patient. Prior to taking piperazin, the freshly-voided urine almost constantly contained it, but in less amount than when the patient first came under observation. No untoward results occurred from the long-continued employment of piperazin. Menstruation during several monthly periods was profuse, and more frequent than had been customary. What effect piperazin had in the production of this, I do not know. Appetite and digestion seemed to be better while piperazin was taken. Headache, from which she has always been a sufferer,—probably largely due to eye-strain,—continues as before.

The second case is one of striking interest, because of the long-continuance of symptoms of stone in the kidney, and the fact that lack of certain common indications of that affection, and that of an accompanying pronounced pyelitis, prevented its recognition by a considerable number of practitioners consulted at various times.

CASE I.—MISS L. F.

Date.	Daily amount of urine in fluidounces.	Specific gravity of mixed 24-hour specimen.	Degree of acidity calculated on 100 c.c. of urine.	Daily elimination of urea in grains.	Daily elimination of uric acid in grains.	Daily dose of piperazin.
April 8.	47	1016	22	307	13	None for 6 days.
April 9.	50	1015	20	300	11½	None for 7 days.
April 11.	58	1016	28	450	15	None for 9 days.
April 12.	42½	1010	15	250	8	None for 10 days.
April 13.	52	1013	18	331	12	None for 11 days.
April 14.	63	.....	...	.....	...	18 grains of piperazin daily.
April 15.	75	.....	...	.....	...	18 grains of piperazin daily.
April 16.	62	.....	...	.....	...	18 grains of piperazin daily.
						Through a misunderstanding specimens were not sent on the 14th, 15th, and 16th, so that no estimations could be made. Piperazin was, therefore, stopped until April 28, that consecutive daily examinations might be again made immediately before taking and while on the drug.
April 24.	50	1013	12	273	15⅝	No piperazin for 7 days.
April 25.	51	1015	20	273	14½	No piperazin for 8 days.
April 26.	46½	1011	30	245	11½	No piperazin for 9 days.
April 27.	56	1012	24	316	15⅝	No piperazin for 10 days.
April 28.	43½	1020	30	496	15½	No piperazin for 11 days.
April 29.	60	1012	14	330	14⅛	18 grains piperazin taken.
April 30.	55	1012	12	420	13¾	23 grains piperazin taken.
May 1.	50	1020	20	386	15⅝	33 grains piperazin taken.
May 2.	55	1012	20	423	13¾	33 grains piperazin taken.
May 3.	44	.....	...	.....	...	23 grains piperazin taken. Specimen of urine not received.
May 5.	60	1012	10	440	19 4/10	23 grains piperazin taken.
May 6.	44	1020	10	400	20	23 grains piperazin taken.
May 7.	53	1016	22	390	11¾	20 grains piperazin taken.
May 8.	51	1019	30	280	19	20 grains piperazin taken.
May 9.	47	1013	20	342	14½	20 grains piperazin taken.

The patient came under observation accidentally. My attention was incidentally called to him as he lay in a paroxysm of colic, in the out-patient ward of the Jefferson Hospital. It appeared that he had been in the habit for some time of going to the resident about twice weekly for hypodermic injections of morphine, because of recurring attacks of severe pain in the right lumbar region, which came on suddenly, incapacitating him for work, and which were ultimately relieved by rest and full doses of morphine. At first I was inclined to the opinion that the man was a malingerer; but a careful inquiry into his history, and an examination of the urine, which I had him send me on the day in which I first saw him, caused me to take a different view of his complaint. The following are the chief points in the case:

A. L., aged thirty-eight; clerk. First seen December 14, 1891. For seven years he had had, at intervals of four days to two weeks, attacks of severe pain in the right loin, occurring suddenly, and lasting from twelve hours to one or two days. Occasionally an attack would continue for almost a week, during which pain never would be absent, though not constantly severe. The initial attack occurred while serving as a United States army private. He was then on the plains, engaged in digging holes for the erection of telegraph-poles. The pain was always deep-seated in the loin. He could not recall it ever shooting towards the bladder or into the testicle, nor was frequent urination a symptom. During and especially succeeding the attacks he had noticed, particularly in the past year or so, that the urine was of an unnatural dark-red hue. This he had not recognized as blood, though it undoubtedly was. Vomiting was not an infrequent concomitant of severe attacks. No access of pain could be elicited by manipulation in the renal region during the attacks. There was absolute freedom from pain in the intervals, and repeated examinations of the abdomen revealed no abnormity of any of the viscera.

He was a robust fellow, with good general health apart from these attacks. The habits were temperate. Gravel had never been noticed in his urine, though it might have been present preceding the appearance of the trouble, or even succeeding its onset, as it had not been looked for. He had consulted a number of physicians, who had treated him principally for gastric and intestinal indigestion. One or two had suggested nephralgia. The operation of stretching the ilio-hypogastric and ilio-inguinal nerves had been undertaken by a surgeon a year or so before with a view of thus relieving the attacks. Stone was not then suspected, it being asserted that, were it present, the symptoms suggested a new phase of that affection. It is said that the kidney was felt during the operation, and no stone detected. Despite this testimony, I believed the case in all probability one of renal calculus, and an examination of the urine during and following an attack strengthened this opinion. It was of very high color, and, after a day's standing, deposited a dark-red sediment to the extent of one-half the bottle in which it was contained. Microscopically the sediment consisted entirely of blood-corpuscles and pus-cells. Portions taken from the upper layer had the appearance of a drop of leucocytic blood. The lowest stratum consisted almost entirely of pus-corpuscles. A specimen voided two days after the attack was acid, of light amber color, specific gravity 1020, and contained $\frac{1}{15}$ per cent. of albumin (Esbach's method). After some hours' standing, a sediment was precipitated, which, microscopically, consisted solely of pus-cells, containing entangled calcium oxalate and uric acid crystals, the last in less amount than the lime oxalate. Sufficient pus was present on decanting the urine to gelatinize the deposit with liquor potassæ, a response always obtained when this test was similarly applied to a number of subsequent specimens.

I represented to the patient that he had beyond doubt a suppurating kidney, which was in all probability due to a stone lodged therein, earnestly advising him to submit to a second operation. But to this advice he would not listen because of his previous experience in this direction.

Because of its unusual interest, the case was kept under observation that a more extended study of his condition and that of the urine could be made. It was thought that he would ultimately submit to an exploratory nephrotomy, and that thus the diagnosis could be confirmed. Little was expected from a resort to drugs because of the pronounced pyelitis complicating the condition.

I made in all thirty-two chemical and eighteen microscopic examinations of the urine. On a number of occasions two or three specimens passed at the time of an attack, at its onset, height, and termination, were examined microscopically. Pus was always present in some amount, except on a single occasion. Blood also could be noted always macroscopically and microscopically at the end of an attack, and frequently microscopically at its height; never,

however, several days after its entire cessation. Epithelium from the kidney pelvis was frequently found, and on three occasions hyaline and epithelial casts were noticed. The urine was always acid when freshly voided; it usually was quite fetid, the latter especially after standing a short time. The mixed twenty-four-hour specimens were turbid, and could not be cleared by heat and filtration. Calcium oxalate crystals were nearly always present in large amount, but occasionally uric acid and urates were in preponderance. Albumin constantly existed in small amount, $\frac{1}{10}$ to $\frac{1}{20}$ per cent., evidently of pyuric origin.

On several occasions the quantity of urine passed during an attack was diminished, though it was normal in amount at the termination, leading to the supposition that the ureter of the affected kidney might be temporarily closed.

On May 8, in a mixed specimen of the total twenty-four-hour urine (23 fluidounces), passed at the height of an attack, there was, in three slides examined, but one pus-corpuscle seen in one slide, three in a second slide, and none in a third, with no blood disks. There were amorphous urates and uric acid crystals. The examined portion was taken from different layers of the sediment, which, in this single specimen, was evidently due to amorphous urates and not to pus. This would indicate temporary obstruction of the ureter of the diseased kidney during this attack; for, also, immediately following it (May 9) blood and pus were present in some quantity. A daily estimate of the amount of urine passed was made, by my direction, for several months. But symptoms of closure of the ureter occurred with no frequency or constancy of relation to the paroxysms. Often, too, when a diminution in quantity of urine took place, it continued until several days after pain had ceased, with no very decided increase in amount subsequently, to indicate cessation of a hydronephrosis.* During the last of January large doses of potassium citrate were prescribed; this salt was continued for one month. Prior to and during this time frequent examinations for uric acid and urea were made. The result of these need not be recorded here. The urea, when potash was not administered, was usually somewhat diminished, varying between 350 and 465 grains daily, and occasionally sinking to below 300 grains. The daily elimination of uric acid was usually in excess. While taking the potassium an increase in the amount of urea and a diminution in uric acid occurred, as is usual.

Piperazin was begun on March 27, 1892, and continued steadily until July, with a single interval of eighteen days. In this time he took thirty 5-gramme bottles, in daily doses varying from 12 to 30 grains. Daily quantitative examinations of the urine as to acidity, uric acid, and urea were made preceding taking the piperazin and immediately succeeding its beginning. This was done in two periods. The second is given in the subjoined table (page 25), as the dose resorted to at first was thought to be too small to materially influence the urinary secretion. Little difference, however, actually exists as to quantity or quality of urine voided at these times under piperazin.

Estimations were now no longer made. Continued daily measurements for some time of the amount of urine passed tallied closely with the foregoing. The attacks became less frequent and severe until the ensuing (last) July, when the more violent ones ceased to occur. The patient was not seen for several months until summoned December 1 for report, prior to preparing this paper. He stated then he had noticed no blood or pus in the urine since early in June, and that none of his former attacks had recurred. At intervals, varying from a month to six weeks, he feels for two or three days a sensation of discomfort not amounting to actual pain in the loin. This always disappears without his having recourse to medicine. This same discomfort he had when I saw him. A specimen of urine was then voided, and examined after standing twenty-four hours in a conical glass. It had remained clear; was of light amber color; non-fetid; specific gravity, 1020; contained no albumin by heat or nitric acid† (including overlaying a cold specimen of it with the latter), but responded slightly to the ring-test with citrated picric acid. The sediment was flocculent and very small in amount. A number of fields in three slides were examined. Pus-corpuscles were present in small amount. Many fields contained none. One field held eight to ten bunched. Three round cells, apparently from the kidney, were present. One large hyaline and a number of casts of urates were seen; urates and uric acid crystals were numerous.

The third case is in all likelihood one of mulberry calculus.

* Infrequently the urine increased considerably in amount during an attack. Thus, in one twenty-four hours, 85½ fluidounces were passed. On this occasion no solids were eaten, and four quarts of milk were taken.

† It was possible always to demonstrate albumin by these coarser tests in the previous specimens.

Miss A. A., first seen August 16, 1891. For four years there had been present stationary pain in the right lumbar region, occasionally accompanied by slight paroxysms, in which the pain darted in the direction of the ureter. The pain was present intermittently at first, but had been constant in the past year. About the time this trouble began she had two quite characteristic attacks of renal colic, lasting each a day, and accompanied by bloody urine. She does not know if she then or since passed a stone or gravel. On examination, there was noted an extended area of renal dulness on the right, with decided tenderness on pressure over it. The left loin was normal. There was a systolic apical heart murmur, due to mitral incompetency, probably the result of a past attack of endocarditis during rheumatic fever, which had occurred two years before. The urine was clear, specific gravity 1023, and contained a trace of albumin by overlaying it with nitric acid.* It was loaded with calcium oxalate, and microscopic calculi of the same. There were a few pus-corpuscles, red blood-disks, epithelium from the kidney and bladder. Several other specimens were examined microscopically within a short time. Calcium oxalate crystals were always present in large amount, with a few blood- and pus-corpuscles.†

I concluded the calculus to be of calcium oxalate formation, and therefore scarcely susceptible of solution. I, however, thought it wise to make a thorough trial of a vegetable

CASE II.—A. L.

Date.	Daily amount of urine in fluidounces.	Specific gravity of mixed 24-hour specimen.	Degree of acidity calculated on 100 c.c. of urine.	Daily elimination of urea in grains.	Daily elimination of uric acid in grains.	Daily dose of piperazin.	Remarks
April 15.	28	.....	...	.....	...	None taken for 8 days.	Just recovering from an attack; urine dark red; contains much blood, pus, and amorphous urates.
April 16.	32	1027	42	436	20	None taken for 9 days.	Color high; turbid; no blood macroscopically; few red disks microscopically; pus-cells in large number.
April 17.	49	1022	22	378	Not estimated.	None taken for 10 days.	
April 18.	68	1021	13	518	Not estimated.	None taken for 11 days.	
April 19.	52	.....	...	.....	Not estimated.	None taken for 12 days.	
April 20.	62	.....	...	.....	Not estimated.	None taken for 14 days.	
April 22.	49	1020	44	423	26	None taken for 15 days.	Slight attack.
April 23.	42	1022	48	462	25	None taken for 16 days.	
April 24.	48	1020	30	433	18	None taken for 17 days.	
April 25.	70	1021	18	509	14	None taken for 18 days.	
April 26.	50	1016	16	432	15	25 grains taken.	
April 27.	58	1021	36	493	24½	30 grains taken.	
April 28.	44	1022	40	500	18½	30 grains taken.	
April 29.	34	1022	70	382	13	30 grains taken.	Urine contains blood; slight attack; ¼ grain morphine taken.
April 30.	37	1022	38	420	15	20 grains taken.	Microscopic examination of urine, pus-, and red-cells; urine still bloody.
May 1.	84	1020	20	611	22	20 grains taken.	Attack ceased April 30; urine light color; turbid.
May 2.	76	1020	13	518	26	20 grains taken.	
May 3.	48	.....	...	.....	...	30 grains taken.	
May 4.	48	.....	...	.....	...	30 grains taken.	
May 5.	41	1024	48	503	18	30 grains taken.	
May 6.	43½	1027	48	579	21	30 grains taken.	Pus-corpuscles; renal epithelium, bacteria; uric acid and urates.
May 7.	36	1016	52	475	19½	30 grains taken.	Attack coming on.
May 8.	23	.....	...	.....	.....	30 grains taken.	Preceding this table a report of the microscopic examination of this specimen is given.

* Albumin was examined for a number of times. It was inconstantly present to Heller's test, but always responded to picric acid.

† A number of subsequent examinations were made. They all agreed substantially with the above, save that hyaline casts were found several times, and once granular casts, and that, after taking piperazin a week or ten days, calcium oxalate crystals were present in very much less amount.

salt of potassium, as there was, of course, a possibility of the stone being composed of uric acid or urates. Potassium citrate was administered in very full doses for six weeks, totally without result. At the expiration of that time absosolutely no improvement resulting, I had Professor Keen see her, with a view to operation. Professor Keen agreed as to the diagnosis, and advised an early exploratory operation. But to this her consent could not be obtained.

Piperazin was begun in March, 1892. At first it was taken in doses of 9 grains daily, and later in much larger quantities. It was continued until July. Prior to beginning piperazin the amount of urine passed was always subnormal. The gravity was usually high (1030 or over). The daily amount of urea was about 400 grains. It will be seen by the accompanying table that the quantity passed was uninfluenced, and continued small as before. The diminished amount constantly passed may in a measure be accounted for by the fact that the patient habitually partook most sparingly of fluids.

A number of urine examinations were made before taking piperazin and while on the drug. A second series is given in this case, as in that of the case preceding, because the dose first resorted to—9 grains daily—was thought too small to materially influence the amount or quality of the urine. The first series, however, agrees substantially with that of the second.

Piperazin in this case, as regards effects on the symptoms, loin-pain, etc., was most disappointing. No substantial benefit can be said to have resulted from its trial. At first it was thought improvement was occurring. The loin-pain diminished and less tenderness existed to pressure. This amelioration, however, was not maintained; and now, as regards the kidney derangement, she is apparently in the condition she was prior to instituting the piperazin treatment. The loin is as tender, the aching as severe, and occasionally darting pains occur from the kidney into the hypogastrium.*

In the first and second of these cases practically a cure may be said to have been obtained. Undoubtedly a cure has resulted in Case I., as all symptoms referable to the kidney have been absent several months, notwithstanding piperazin was discontinued six months ago. A most interesting fact in this case is the permanent disappearance of gravel from the urine. Gravel had been a persistent and troublesome symptom for months prior to treatment with piperazin. In the second case, one of undoubted pyelitis, in all probability calculus (uric acid or calcium oxalate), the pus has almost entirely disappeared from the urine. It now manifests its presence only by microscopic examination. None of the former attacks of lumbar pain, of seven years' continuance, have been present for seven months.

In the third case—that of probable mulberry calculus—no benefit has been obtained by the use of piperazin. This is in accordance with what might be anticipated from the behavior

CASE III.—MISS A. A.

Date.	Daily amount of urine in fluidounces.	Specific gravity of mixed 24-hour specimen.	Degree of acidity calculated in 100 c.c. of urine.	Daily elimination of urea in grains.	Daily elimination of uric acid in grains.	Daily dose of piperazin.
April 9.	30	1033	50	400	15$\frac{2}{3}$	6 days after discontinuance of a daily dose of 9 grains.
April 10.	28	1033	46	446	15$\frac{5}{6}$	No piperazin.
April 11.	32	1034	43	349	19$\frac{1}{2}$	No piperazin.
April 12.	27	1030	42	321	14$\frac{1}{3}$	24 grains taken.
April 13.	30	1033	44	368	20	24 grains taken.
April 14.	32	1026	34	381	15	24 grains taken.
April 15.	40	1023	28	346	15	24 grains taken.
April 16.	48	1025	33	414	8	20 grains taken.
April 17.	34	1032	54	454	15	22 grains taken.
April 18.	27	1027	38	212	7$\frac{1}{2}$	22 grains taken.
April 19.	32	1032	31	398	18	22 grains taken.
April 20.	32	1031	46	480	15	22 grains taken.
April 21.	36	1025	40	408	15	22 grains taken.
May 4.	30	1030	52	340	14	20 grains daily up to May 2; then 30 grains daily to date.
May 5.	30	1030	52	400	15	30 grains.
May 6.	32	1032	47	350	13$\frac{1}{2}$	30 grains.
May 7.	37	1022	42	385	12$\frac{3}{4}$	30 grains.

In the third case—that of probable mulberry calculus—no benefit has been obtained by the use of piperazin. This is in accordance with what might be anticipated from the behavior

* These were occasionally present when she first presented herself for treatment. They became a trifle more common after piperazin was begun.

of piperazin to this salt of calcium, upon which it has no solvent action.

What is the action of piperazin in cases of nephrolithiasis in which a cure is obtained? The answer seems not far to seek,—by its marked disintegrating effect upon uratic stones lodged in the kidney pelvis, which it bathes in process of elimination. In the test-tube the solvent action of even dilute (one per cent.) solutions of piperazin upon portions of uratic calculi is decided. In a warm chamber, with an equable blood-heat temperature, these are readily softened in a few hours, and this effect is more decided if the solution is permitted to flow slowly over the stone. But if calculi are so dissolved in the kidney, an increase in the uric acid eliminated is to be expected during their disintegration, if a stone of large size is in question.* This increase, though carefully examined for, was not detected in my cases. It may be that it occurred in Case I., as estimations could not be undertaken for several weeks after piperazin was begun. Then great improvement in symptoms had occurred. In the second case the doses first used were too minute for this result to be anticipated. The symptoms continuing, the remedy was withdrawn, estimations were made, and larger doses administered. However, no increase in uric acid attributable to the remedy was evident. But also no marked diminution in symptoms of stone occurred while estimations were in process. Distinct amelioration did occur later, while the remedy was being taken in full doses, but when the case ceased to be under continuous observation. In this case the stone, perhaps, being a mixed one of calcium oxalate and uric acid, was more difficult of solution, so that disintegration occurred too gradually to produce early appreciable results.

Our present knowledge of the precise mode of action of piperazin is so limited that little more than theorizing as to the cause of the results obtained can be attempted. That piperazin is beneficial in cases of gravel and stone is certain. Sufficient clinical reports are now on record as to this. Its precise mode of action is still somewhat obscure, and has not been determined by those hitherto investigating the subject, judging from the contradictory statements, all of which are based on narrowed data. Ebstein and Sprague† found no alteration in urea or uric acid excretion, but noted an increase in the amount of urine, which, at times, became of an alkaline reaction. Bardet‡ reported an increase in the soluble urates, while Vogt's experiments showed a diminution in the latter, with an increase in urea. Brik§ more recently records Heubach and Kuh's having detected a slight increase in excretion of uric acid, while he himself noted an increase in quantity of urine; but, as with Heubach and Kuh, Brik found no alteration in the reaction, it never becoming alkaline during administration of piperazin.

Extended examinations as to the effect of piperazin on nitrogenous excretion in the urine should be made in both healthy and uratic subjects before accurate judgment can be arrived at as to mode of action. This I had myself undertaken, but was temporarily forced to abandon because of pressure of other work. Uric acid estimations by trustworthy methods are troublesome and consume much time.

In cases of uric acid diathesis other than stone, from what is known of the solvent effects of piperazin on uric acid and the solubility of piperazin urate, an increase in excretion of uric acid might be expected under full doses of piperazin. Yet some observers have reported a diminution, with a corresponding increase in urea, indicating that, besides its affinity for uric acid, piperazin promotes the transformation of uric acid into urea, as do markedly the salts of potassium with the vegetable and carbonic acids. These potassium salts were long ago asserted by Basham to act by virtue of the increased alkalinity of the blood they produce, promoting its oxidation function, and this explanation is now generally accepted. When these salts of potassium are administered, the acidity of the urine is promptly diminished, and soon disappears, while the quantity of uric acid is reduced to a minimum, and that of urea increased often several fold. Piperazin has been asserted to produce identical results on the reaction of the urine, and to also markedly augment urea elimination. I am, however, unaware of any authentic instance of the urine becoming alkaline after the use of piperazin. Perhaps larger

* It should, however, be here stated that a uric acid calculus may be of some size—that of a pea or larger—and yet weigh but a grain or two. Such a stone, requiring several days to disintegrate, would not appreciably affect the amount of uric acid excreted. A very large calculus would, of course, weigh much more; evidence of its prompt solution should then be apparent.

† *Berl. Klin. Woch.*, No. 14, 1891.

‡ *Bull. Gèn. de Thèrap.*, March 8, 1891.

§ *Wien. Med. Blätter*, December 10, 1891 (see THERAPEUTIC GAZETTE, p. 113, February, 1892). Heubach and Kuh's paper appeared in *Internat. Centralb. f. d. Physiol. u. Pathol. der Harn u. Sexualorgane.* See "Notes on New Remedies," December, 1891. Abstracts of most of the recent literature on piperazin will be found in late issues of the last-named journal.

doses than those usually administered would induce this; ½ drachm daily for some days in several of my cases failed to effect this. It may be seen by the foregoing tables that the acidity quantitatively estimated from mixed twenty-four-hour specimens was not appreciably affected by the drug. Nor can it be said that an increase in urea excretion occurred in my three cases, judging from the estimations made immediately before and after giving piperazin. In Case I., during the first five days on piperazin, in which 135 grains were taken, subsequent to its temporary discontinuance there were only 1989 grains of urea excreted against 1603 in the five days preceding, a total increase of but 395 grains. A total increase of 14 fluidounces of urine also occurred. In Case II., 2259 grains of urea were eliminated in the first five days, and 2406 in the second, in which 135 grains of piperazin were taken, a total increase here of but 147 grains. A total diminution in urine occurred in the second five days of 2 fluidounces. In Case III., 1195 grains of urea were passed in the first three days, and 1070 in the second three days (when on piperazin in doses of 24 grains daily), a total diminution in urea of 125 grains. A total diminution in urine also occurred in the second three days of 2 fluidounces. These differences in urea excretion are, of course, too slight and common to be attributed to the administration of piperazin.* The extraordinary increase in urine in Case I. under piperazin, and the subsequent maintenance of the normal average, is explicable on the probable supposition I have already advanced,—that of the removal of a hydronephrosis by rendering patent a ureter occluded by stone. In the other two cases no increase in urine occurred, which somewhat surprised me, as in several other instances in which I administered piperazin a more or less marked increase is stated to have occurred under it, though no measurements were made.

THE VALUE OF SALOPHEN AS AN ANTI-RHEUMATIC.

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On the flood-tide of coal-tar products which are now being introduced to the medical profession, with the assertion that each and every one of them is capable of curing almost every ill to which flesh is heir, the careful physician will be able to discern, among the vast amount of useless material, quite a number of remedies which are really serviceable to him in his daily practice. The writer's object in this article is not to speak of those drugs which have already come into general use because of the wider recognition of their advantages, but rather to give the results which he has obtained with salophen, a remedy which has been before the profession for but a few months. It is not necessary to describe this drug in its chemical relations. Suffice it to state, it is claimed for salophen that it does not possess the poisonous properties which have forced us to employ salol with some care. It will be remembered that salol contains sixty per cent. of salicylic acid and forty per cent. of carbolic acid or phenol. By combining salicylic acid with acetyl-paramido-phenol, we have produced a compound in which the proportion of salicylic acid and innocuous phenol are equal, and which does not possess theoretically if practically the power for harm of that very valuable and widely-used substance, salol. The writer has not employed salophen in large enough doses, or in a sufficient number of cases, to be able to draw practical deductions as to its harmlessness. He can only assert that in the following cases, and in others in which he has employed it, it has given results which are so good that he has added it to the list of remedies which he constantly bears in mind as meeting important indications. Papers have already been published detailing cures by salophen of acute articular rheumatism. With its employment in this disease we are not sufficiently familiar to speak, but of its value in that host of minor ailments closely allied to true rheumatism it has given us the best results.

In the case of a woman, aged sixty-five, who was very stout and plethoric, and who suffered from severe sciatic neuralgia, associated with some myalgia, and muscular stiffness in other parts of the body, salophen alone, or combined in equal parts with phenacetin, gave results which the older compound, salol, failed to produce. It did not disorder the stomach, there was no difficulty in giving it in pill form, and the rapidity of its action was highly agreeable to physician and patient.

In another case, a man suffered from a severe and prolonged attack of rheumatic neuritis, involving the brachial plexus, which forced him to leave the city and to take a holiday of several weeks. This, however, produced no benefit, but salophen, in full doses,—10 or 20 grains three times a day,—caused entire relief

* In two similar periods of five consecutive days, when on no drug, a difference in the amount of urea excreted in my own urine amounted to 250 grains.

of the symptoms very rapidly. He had taken, before salophen was given to him, most of the antirheumatic remedies, and had used local applications without any benefit. It is only fair, however, to state that, while the salophen was given, antirheumatic treatment, so far as diet and exposure was concerned, was carefully carried out. On the other hand, similar precautionary measures had attended the administration of the antirheumatic remedies which he had taken early in the attack.

In a third case, that of a middle-aged man, with a distinct tendency to uricæmia, which manifested itself by fleeting neuralgic attacks in different portions of his body, by attacks of rheumatism in isolated muscles, and by neuralgia of the spermatic cord and testicle, salophen, in the dose of 10 grains three times a day, proved very serviceable.

In the fourth case, a woman presented the following history: Her age was sixty-two; she had enjoyed perfect health until the last four or five years, when she was attacked by frequent headaches, which sometimes occurred as frequently as every forty-eight hours. These headaches were associated with middle-ear disease, largely dependent upon a gouty or rheumatic diathesis. The attacks of headache were so severe that they produced much nausea and gastric distress. At all times there were hyperæsthetic spots in the scalp, which were so tender that combing or brushing the hair became painful. The digestion was in fairly good condition, except that there appeared to be an undue tendency to gastric and intestinal fermentation. The use of one of the diuretic mineral waters taken freely half-way between and before meals, and the employment of 10 grains of salophen four times a day in pill form, gave very extraordinary relief, so that the patient considered herself practically entirely relieved. In this case the stoppage of the drug for a few days, associated with a severe nervous shock and moving from one residence to another, caused a temporary relapse, but careful attention to diet and the renewed administration of salophen once more produced favorable results.

One point in regard to the administration of antirheumatic remedies should always be remembered. Those who have treated rheumatic conditions to any extent must have noticed very frequently that the disease most persistently resists all medication, and then suddenly improves when medication has ceased or when some comparatively feeble remedy is administered; in other words, rheumatism and its allied conditions, which are more and more frequently seen, particularly in city life, present a picture which is capable of so many changes that the physician who studies the action of drugs under these circumstances must always be on his guard, lest coincidence be confounded with therapeutic efficiency. No positive conclusions should be reached in regard to this class of remedies, either for or against them, unless the benefits derived are most noteworthy and are repeated with sufficient constancy to indicate very strongly that the drug is responsible for the change in the aspect of the case. This article is open to these doubts from the stand-point of scientific accuracy in observation, but the results have at least encouraged the writer to use the drug with confidence.

The question whether salophen will prove as valuable as has its sister salol in the treatment of many various conditions, more particularly intestinal disorders, while answered affirmatively in theory, can only be decided practically by its free employment in such conditions.

POISONING BY SULPHATE OF STRYCHNINE.

In the *British Medical Journal* for August 21, 1892, Drs. Wallace and McRae report the case of a man who swallowed no less than twenty grains of powdered sulphate of strychnine in an attempt at suicide.

The patient was sixty-five years of age. The physicians arrived at his bedside between seven and ten minutes after the ingestion of the drug, and at once administered one-fifth of a grain of apomorphine hypodermically; six tumblers of hot water, with three tablespoonfuls of mustard, and three tablespoonfuls of salt, by the mouth, for the purpose of producing vomiting.

These remedies acted promptly, and after their action a stomach-pump was used to repeatedly wash out the stomach. Three ounces of tannic acid were administered as an antidote, and, finally, a large dose of bromide of potassium and chloral was given. The patient escaped with nothing more than twitchings and jerkings of the muscles of the limbs, and tetanic spasms of the muscles of the lower jaws, with violent contractions of the œsophagus.

They attribute his recovery after this enormous dose of strychnine, first, to the short space of time which elapsed before treatment was instituted; and, second, to the very efficacious and rational method adopted to remove the strychnine from the stomach and to prevent that which had been absorbed from acting too suddenly upon the nervous system.

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Leading Articles.

THE INFLUENCE OF CALOMEL ON THE FLOW OF BILE.

IF there is one point firmly fixed in the minds of the average practitioner of medicine it is that the mild chloride of mercury increases the quantity of bile in the intestine. If such a believer is questioned as to whether this increased amount of biliary fluid is due to a true increase in secretion, or simply to an increase in the flow of bile from the gall-bladder, he will either state that he is unable to answer the question, or that he believes that it is an increased secretion.

Practically the position of the profession in general in regard to the purgative influence of calomel is that the drug exercises a stimulating effect upon the biliary gland. Careful experimentation upon the lower animals by several competent observers, and careful studies made by physiological chemists, fail, however, to give us very much light upon this subject. It is held by some that calomel never acts as calomel, but is converted by the hydrochloric acid of the gastric juice into corrosive sublimate, and that this drug then stimulates the liver to increased activity.

On the other hand, the best chemical investigations show positively that the feeble acidity of the gastric juice and the temperature to which the calomel is exposed are not favorable to the conversion of a sufficient quantity of calomel into corrosive sublimate to account for any hepatic influence. Thus, it was found by Rutherford and Vignal, in their well-known series of studies upon the influence of drugs upon the secretion of bile, that if five grains of calomel are subjected, at 100° F., for seventeen hours, to the action of normal gastric juice, not more than one-thirty-fifth of a grain of mercuric chloride is produced. As calomel does not remain in the human stomach for more than a night at the utmost, and generally but a very few hours, it is not likely that as much as a thirty-fifth of a grain of mercuric chloride is produced from the moderately large dose of five grains.

In contradiction of this, Bucheim, Winkler, and others assert that no conversion whatever takes place at the temperature of the body, and Jaennel's later studies support this view.

The other theory as to the change which takes place in calomel prior to its action upon the liver is that it escapes into the intestine, where it is decomposed and the gray oxide of mercury precipitated, which may, however, be held in solution by any fatty materials, which, being mixed with alkaline liquids, practically form soaps. It is thought by Wood and others that this is the more probable result, particularly in view of the fact that calomel acts more like blue mass than corrosive sublimate. Further than this, these opinions are confirmed by the fact, with which all of us are familiar, that the hepatic influence of calomel is much more positively asserted if at the same time small doses of the bicarbonate of sodium are administered. Under these circumstances the bicarbonate of sodium naturally diminishes, to some extent at least, the acidity of the gastric contents, and also directly or indirectly tends to increase the alkalinity of the contents of the duodenum.

As if to increase the complexity of the problem, the studies of Rutherford and Vignal seem to prove conclusively that in the dog, at least, mercuric chloride has a direct stimulant effect upon the hepatic cells; whereas, calomel, while

producing purgation by increasing the secretion of the intestinal glands, in no way increases the true secretion of bile, and this would seem to indicate that, after all the influence of calomel upon the liver is due to a very minute portion of it being changed into corrosive sublimate. Probably the truth of the matter is that we have as yet no definite scientific explanation of how calomel really does act. It may be that the solution of the problem lies in the hepatic influence exercised by the presence of minute quantities of corrosive sublimate, and the purgative effect produced by that portion of the calomel which has not been converted into the strong chloride of mercury. This is rendered the more likely in view of the fact that the corrosive sublimate has been found a feeble intestinal stimulant, while the calomel has been found to produce active purgation in dogs without producing an increase in biliary flow when the drug has been introduced into the duodenum.

It has been suggested, too, that calomel itself may stimulate the bile-expelling mechanism, while the minute portion of corrosive sublimate increases the secretion of the liquid; and, again, that, by means of the purgative effect that it produces, certain substances which have been in the intestine are immediately removed, and, as a consequence, a depressant influence upon the hepatic cells no longer exists.

While at first sight the argument seems a forcible one, that a vast clinical experience in regard to calomel is far superior to any series of experiments on dogs, it is only just to remember that in the entire series of remedies supposed to produce an hepatic effect, calomel is the only one which failed to influence the liver of the dog as the others influenced the liver of man.

It is to be hoped that those physicians who have opportunities to examine persons suffering from biliary fistula will take the opportunity, whenever it arises, of watching the influence of calomel upon the flow of bile from the fistulous opening.

This subject also is of interest to the practical physician in relation to the administration of calomel in compressed tablets or other preparations when mixed with what might be called excipients. Under these circumstances, if one of the excipients is bicarbonate of sodium, the tablet almost always undergoes a change, and becomes of a gray color. Those who have used pills or tablets of calomel which have been kept for a long period of time seem to be universally in accord with the statement that they have lost the hepatic effect which a recently-prepared powder always possesses. Thus it has been frequently found that no biliary flow occurs under the use of stale tablets; whereas, free bilious purging follows the administration of freshly-prepared powders.

THE TREATMENT OF HYPOPYON KERATITIS.

THE term purulent keratitis describes in a general way the forms of inflammation of the cornea associated with the development of pus, either within the layers of the cornea or in the anterior chamber. It is typified by the disease which has been variously called abscess of the cornea, hypopyon keratitis, and serpiginous or creeping ulcer. The serious nature of the affection, the scarring of the cornea which practically always follows it, the disfiguring staphylomatous protrusion which may ensue, and the actual blindness which are only too frequently the result of it, furnish sufficient reasons for the most attentive treatment, and if any new method, or new method of applying old measures, gives evidence of producing better results than those which have been previously employed, we necessarily turn to it. For this reason the paper of Fukala (*Berliner Klinische Wochenschrift*, December 5, 1892), entitled "A New Method of treating Abscess of the Cornea," is worthy of review.

Two evident indications for the treatment of abscess of the cornea are to prevent the bulging of this structure at the point of the lesion and to evacuate the pus, either from the layers of the cornea or from the anterior chamber, or from both places. The tendency to protrusion of the affected tissue is brought about partly by the fact that the walls no longer resist the intraocular tension so well as they did before they were attacked with the disease, and partly by the fact that the pus burrows, or at least spreads, in the lamellæ of the cornea and lifts them from the surrounding more healthy tissue, very much as the same process takes place in an abscess in the subcutaneous tissue where the gradual accumulation of pus and its infiltration along the lines of least resistance raise the superficial tissues above their surrounding level. With these two indications in view, and influenced by the facts which have just been recited, Fukala believes that the treatment of hypopyon keratitis, or, as he calls it, abscess of the cornea, should consist in methods which are calculated to change the entire abscess into an

open ulceration, to which the stimulus to cicatrization has been given.

This he accomplished in the following manner: The conjunctival cul-de-sac is carefully irrigated with a 1 to 5000 sublimate solution, after the eye has been rendered anæsthetic with a few drops of a five-per-cent. solution of hydrochlorate of cocaine. The superficial portion of the lesion is seized with a pair of fine forceps (iris forceps), and removed by means of the iris scissors. Very often the forceps are unnecessary, the scissors being all-sufficient. The important point is that all of the necrotic tissue shall be removed to the extreme periphery of the lesion in its entire circumference. Afterwards the open wound is sprinkled with the sublimate lotion, atropine is instilled, and a pressure bandage is applied. The open wound which results from this procedure, according to the author, is speedily cicatrized by the process of granulation. In the cases which are quoted in support of this, two in number, the result appears to have been prompt and satisfactory.

It is difficult to understand why the author of this paper refers to the method which he employs as a new one, as the removal of necrotic tissue from a sloughing ulcer of the cornea by some means or other, although perhaps not necessarily with an iris forceps and iris scissors, is a very well recognized surgical procedure. It serves, however, as an introduction to what are the best means of treating these serious forms of corneal ulceration. Saemisch's section, once so popular and, when successfully performed, capable of yielding the very best results, has not found in recent times the favor which it once enjoyed, largely, perhaps, because other methods—for example, the actual cautery—have secured equally good results, and have been unattended with many of the dangers which encompass it, chief among which is prolapse of the iris into the lips of the wound. It would be useless to urge at this late date the claims of the actual cautery in the treatment of infective corneal ulceration. These are so well established as to require no further commendation; and Fukala, impressed with the value of his own method of treating this disease, brings forward as its chief endorsement that in his hands it has yielded as good results as has the actual cautery.

There are, however, cases in which a very large ulcer is associated with a hypopyon that nearly fills the anterior chamber, and in which it can be demonstrated that the collection is exceedingly tenacious, having assumed the character of a slough. Under these circumstances there is a strong indication for Saemisch's section, or, at least, for a section which in some way makes it possible to reach the material in the anterior chamber with forceps, or to afford a point of entrance for the tip of a delicate syringe, with which the anterior chamber may be irrigated. As Gruening long ago pointed out, it is not unlikely that in these cases a combination of Saemisch's section and the actual cautery is preferable, because the latter destroys the septic material of the cornea and the former removes septic material from the anterior chamber.

The comparative value of incision and the galvano-cautery, as given in a table compiled by Nieden, is as follows: In 113 cases of incision there were 9.7 per cent. cases of phthisis bulbi, 26.5 per cent. of leucoma adherens, 61 per cent. of macula, and 3.5 per cent. with unknown result; while in 100 cases treated with the galvano-cautery there was 0 per cent. of phthisis, 3 per cent. of adherent leucoma, 9 per cent. of leucoma, and 88 per cent. of macula. It is, however, very difficult to obtain accurate comparative statistics on this point, and the treatment of each case must be governed by the existing conditions and cannot be decided on statistical information.

So far as Fukala's recommendation to remove the necrotic tissue and to convert the abscess into an open ulcer is concerned, it may be said that, independently of the fact that this method, or one analogous to it, is well known and often practised, there is reason to fear that resulting scar may be more extensive than that which is caused by some other procedures. One of the objections urged against the galvano-cautery is the fear that it may lead to a very firm and extensive cicatrix. This objection does not seem to be well founded, and as Fuchs has stated, and as it has often been shown since, the opacity is not greater after the actual cautery has been used, provided it is applied properly and only within the area of necrotic tissue, than if it had not been used. The small circumscribed abscesses of the cornea, which really, by virtue of the fact that the superficial epithelium has not broken, belong rather to the non-ulcerated lesions of the cornea, are very well treated by cutting with a delicate knife the superficial layers, and thus evacuating the pus, as is especially urged in a paper by Hansell; or, after incision of the superficial layers, the necrotic tissue may be touched with the point of a galvano-cautery or scraped away with a small curette, converting them, as Fukala would do with the larger ones, into an open ulcer.

After the ulcer has been thoroughly broken down by scraping its margins, the surface may be cauterized with a two-per-cent. solution of nitrate of silver, which, in the opinion of many surgeons,—Berry, for instance,—is quite as efficacious as any other method. Fukala, after his operation, recommends sprinkling the surface of the ulcer with sublimate lotion; no doubt a very excellent precaution, and one tending to stimulate healing; but, on the whole, iodoform is the preferable drug. It is well borne by the cornea, has a distinct anæsthetic action, and in corneal tissue probably encourages the healing by granulation. The iodoform treatment alone, however, is hardly sufficient, and although the drug holds a justly high place in the treatment of corneal ulceration of the sloughing type, it has a good many failures to its credit, and statistics show that from six to seven per cent. of shrunken eyeballs have resulted from depending alone upon the iodoform treatment of infective corneal ulcers.

It should not be forgotten that many of the cases of moderate hypopyon keratitis do remarkably well without operative interference. Atropine or eserine, according to the indications, hot compresses, a compressing bandage, and irrigation of the lachrymal sac constitute measures which have yielded abundant successes; in fact, one of the chief difficulties of telling exactly what is the most valuable form of treatment in any one particular type of corneal ulceration is, that it is so rare to employ the various measures unassociated; thus, the author whom we have several times quoted, practising the very rational and quite common procedure of removing the necrotic tissue in order to convert the slough into an open and healthy sore, follows his treatment by sublimate lotion, atropine, and a compressing bandage, and is rejoiced to find, in one instance at least, the disappearance of a small hypopyon in the course of twenty-four hours, a result which might have ensued without the operative interference. This combining of methods of treatment has been one of the chief difficulties in exactly determining the value of eserine in corneal ulceration. The myotic has been used with very good results, and in recent times it has seemed with better results than those obtained from mydriatics, but it has almost always been employed in association with other methods of treatment: hot compresses, bandages, antiseptic fluids, bracing constitutional treatment, and rest in bed.

The summary of the matter, so far as surgical procedures are concerned, would seem to be somewhat as follows: The actual cautery in medium-sized serpetic ulcers of the cornea with moderate degrees of hypopyon; Saemisch's section, or a modification of this, in large infective ulcers with extensive hypopyon, composed of tenacious material resembling a slough; a combination of the galvano-cautery and corneal section in types of extensive ulceration and tenacious hypopyon, where there has been a particular tendency for the ulcer to spread and to resist treatment; some form of operation which removes the necrotic tissue in circumscribed abscesses of the cornea, or in small abscesses which have burst superficially and are beginning to infiltrate the lamella of the cornea; and, finally, in any form of infective ulcer of the cornea, after removal of sloughing tissue by any of the recognized means, the direct application to the lesion of an antiseptic, and experience seems to show that iodoform is the one most generally applicable. In all of the instances quoted, if there is no contraindication, the compressing bandage assists in the cure, and, indeed, very likely is responsible for a great deal of it.

THE TREATMENT OF FISSURES AT THE NECK OF THE FEMALE BLADDER.

AS a complication of chronic cystitis, or, indeed, in many cases when the mucous membrane of the bladder is as a whole quite healthy, there is found at the neck of the bladder an area of intense local congestion, frequently associated with abrasions and fissures. This is usually dependent upon an antecedent gonorrhœa, and is in many respects similar in pathology and symptomatology to the posterior urethritis of the male. Its true nature is generally not recognized; its symptoms are grouped with those dependent upon cystitis, and recovery is usually little hastened by the internal treatment, upon which reliance is placed.

This localized inflammation is characterized by frequency of micturition, at times accompanied with severe tenesmus, especially after exposure to cold, or indulgence in alcoholic or sexual excesses. These symptoms are allayed, or even entirely relieved, by rest in bed. At the times when they are most severe there is usually some blood passed, generally no more than a few drops, which appear immediately after micturition. Sometimes the bleeding is so frequently repeated and persistent that the patient is rendered distinctly anæmic. On examination *per vaginam* during these periods of

exacerbation, a tender spot can often be found near the neck of the bladder.

A positive diagnosis can be made by an examination with the speculum. The thickened, congested, and often fissured mucous membrane at the neck of the bladder offers a full explanation for the symptoms which have not infrequently been mistaken for those due to a tumor or a foreign body. In some cases various reflexes are excited, and a condition of neurasthenia is produced very similar to the sexual neurasthenia constantly observed in males who are the subjects of chronic posterior urethritis.

The results of direct treatment are in these cases highly satisfactory. The urine must be rendered bland, slightly antiseptic, and, where the symptoms are not too acute, mildly stimulating. This end is accomplished by careful regulation of the diet, the administration of alkaline diuretics, and the cautious use of salol, boric acid, and oil of sandal-wood. Salol and boric acid are administered in 5-grain doses four times a day. Of all the aromatics, oil of sandal-wood gives the best results in this form of inflammation. It should be given in 10- to 20-minim doses one hour after meals, since thus administered it is less likely to disturb the stomach. None of these remedies can accomplish sufficient good to compensate for the damage incident to marked disturbance of digestion, since the effect to be produced is, after all, only of secondary importance. Should any dyspeptic symptoms appear, ingestion of these remedies must be stopped.

The direct treatment is that upon which reliance must be mainly placed, and will usually promptly cure. Where there is violent tenesmus, temporary relief may be obtained by the instillation of a few drops of a four-per-cent. solution of cocaine into the deepest part of the urethra. The urethra is first gently dilated either by means of short, cylindrical sounds, or by a urethral dilator. The diseased area is exposed by means of a urethral speculum (and for this purpose Skene's pattern is eminently satisfactory), and should be touched at intervals of two to three days with strong solutions of nitrate of silver, 20 to 60 grains to the ounce. There should be a daily irrigation of the urethra with a mild antiseptic solution, preferably permanganate of potassium (1 to 6000), permanganate of zinc in the same strength, or bichloride of mercury (1 to 10,000). This irrigation is best accomplished by attaching a small soft catheter to a fountain-syringe filled with the hot solution which has been selected for the flushing, lubricating the soft catheter with glycerin, introducing it into the bladder, starting the stream from the fountain-syringe, and slowly withdrawing the catheter. In some cases, for direct application, sulphate of copper (ten to twenty per cent.) solution, or carbolic acid and iodine, equal parts of each, will be found more serviceable than nitrate of silver. In gonorrhœal cases, however, and these will include the great majority of all these cases, the silver is generally the most serviceable. The strong solutions are, of course, always applied by means of cotton on a holder.

PENTAL AS AN ANÆSTHETIC.

THIS drug, which since the year 1856 has had a limited use as an anæsthetic, has recently been warmly recommended, because of certain advantages which it seemed to possess over both chloroform and ether. But a small quantity (for a period of half an hour, from half an ounce to an ounce and a half) is required to anæsthetize; the full effect is produced in less than two minutes, the period of excitement is very brief, there is little or no interference with the respiratory functions, the effects of the drug rapidly pass off, and, as a rule, neither headaches, vomiting, nor any other disagreeable symptoms follow. Anæsthesia may be obtained without loss of consciousness or pupil reflex.

Though this drug possesses marked advantages, the fact that it has produced one death in a limited number of administrations (one thousand) has prevented conservative surgeons from giving it a trial, though the fact was clearly recognized that the single fatality might have occurred quite independently of any lethal influence of pental. Recently, however, there has appeared a research by Kleindienst, which, if corroborated by others, should definitely settle the position of pental as an anæsthetic. Kleindienst found in a large percentage of cases (eight out of twenty-five) that the administration of this drug was followed by the appearance of albumin in the urine, supplemented by blood and casts in some cases.

With this record against the pental (one death in one thousand administrations and involvement of the kidneys in thirty-three per cent. of cases), we must look to Germany for corroboration or disproof of the statements of Kleindienst, since human life is regarded by the English and American surgeons as too valuable to risk in such a research.

Reports on Therapeutic Progress.

THE EFFECTS OF THE IODIDES ON ARTERIAL TENSION AND THE EXCRETION OF URATES.

HAIG, at a meeting of the Royal Medical and Chirurgical Society, on Tuesday, December 13, 1892, referred to an article of his in vol. lxxi. of the *Transactions* on drugs which diminish the excretion of urates. The list of substances which have this action has now been greatly enlarged, and he believes that the iodides must be added to it. He also believes that the action of these substances on the solubility and excretion of urates will explain a large part of their value and utility in medicine and surgery, just as he has previously said elsewhere with regard to opium and mercury, which act in the same way.

He was at first misled by his results with the iodides, and was further hindered by their affecting the process which he has used for the estimation of uric acid (Haycraft's). These difficulties were, however, overcome, and, with greater knowledge and experience of the working of certain laws which govern the excretion of urates and of water, he now believes that it is possible to speak more decidedly as to the action of iodides.

One of these laws is that first formulated by the writer at the beginning of 1889 (*British Medical Journal*, vol. i. 291), "that, *cæteris paribus*, arterial tension varies with the uric acid that is circulating in the blood." Another is that from day to day and from hour to hour, in physiological conditions, the urinary water varies inversely as the uric acid excreted along with it. Another is that in physiological conditions the excretion of urates in the urine varies inversely as the acidity of the urine. And another, that the amount of urate in the urine is, relatively to the urea, to a certain extent an index of the amount of urate passing through the blood.

From these it follows that arterial tension varies with the amount of uric acid that is being excreted in the urine. But arterial tension means contracted arterioles, and contracted arterioles mean that water has difficulty in passing the kidneys, as is shown to be the case in the parallel action of digitalis and other drugs which contract the arterioles, and this is the reason why the urinary water varies inversely as the uric acid (see book on "Uric Acid," by Haig, p. 100).

The diuretic action of iodides is well known, and the writer shows four figures which demonstrate that at the time an iodide is causing diuresis it is also causing a diminished excretion of urate, and that the one thing is related to the other as cause and effect.

The figures also show well the inverse relation of urates and water in excretion; also that under the influence of iodides the excretion of urate ceases for a time to bear its usual inverse relation to acidity.

But the writer points out that some twenty drugs, or rather groups of drugs, all diminish the excretion of uric acid in the urine, and at the time they do this produce also relaxed arterioles, lowered arterial tension, and diuresis.

Then iodides can be classed along with these drugs, and as the latter can further be broken up into three groups, according to the way in which they produce the diminished excretion of uric acid, it may be possible to say which of the groups the iodides most resemble in their mode of action.

He points out how this action of iodides on the solubility of urates, and so on the contraction of arterioles, enables us to explain all their most important effects in physiology and pathology, just as he has previously pointed out in the case of opium and mercury.

Lastly, he refers to his previous writings on uric acid as a cause of high arterial tension, and suggests that there is no possible explanation of the parallel action of all these drugs except that which he has given,—namely, that urates contract the arterioles all over the body, and raise arterial tension, while their absence from the blood-stream, however produced, allows these vessels to dilate.

The action of iodides on arterial tension is thus completely explained by their influence on the solubility and excretion of urates.—*Abstract.*

WINE OF IPECACUANHA FOR INEFFICIENT LABOR-PAINS.

DR. H. STILLMARK reports a confinement case in which he made most successful trial of wine of ipecacuanha, which Draper commends for producing, after two or three doses of 10 to 15 drops, energetic labor-pains.

The patient was twenty-three years old, and had borne three children, the last one supposably prematurely, as the child died soon after birth. All three births had occurred quickly and easily. Her last menstruation was July 10, 1891. On March 22, or about three weeks before the presumptive termination of her time, without any known cause, the membranes ruptured, accompanied by one or two feeble pains. Stillmark was called to the patient at five o'clock

in the morning of March 23. The examination made at once showed a cranial presentation,—the head in the pelvis; the mouth of the womb dilated to the breadth of two or three fingers; fœtal heart-beat, 140; no pains present; liquor amnii trickled constantly from the vagina. At ten o'clock the patient was bathed. As there were no pains up to two o'clock in the afternoon, numerous warm vaginal douches were applied, but in vain. The fœtal heart-beats continued normal; the condition of the patient was excellent. She slept during the following night. On the morning of the 24th, after the patient had been again bathed, warm douches were again used, the uterus given gentle massage, and hot applications made to the body. As none of these measures produced the desired result, and the patient was feeling exhausted from the long excitement, Dr. Stillmark decided to try the wine of ipecacuanha. At noon the patient was given 15 drops. After half an hour the patient said that her "belly suddenly became hard." At half-past two, 15 drops were again given. About three-quarters of an hour after the second dose, strong normal pains began. At four o'clock repeated vomiting occurred. As the pains became feebler towards evening, and almost ceased at ten o'clock, the dose was again given; this time, on account of the nausea, only 5 drops were given. Again the action was prompt. In consequence of the renewed energy of the pains, the child was born unasphyxiated at midnight. The labor was dry. Spontaneous expulsion of the placenta occurred; the puerperium was normal.

Of course this was only one case; but, on account of the absolute lack of pains, it speaks well for the power of the wine of ipecacuanha to produce normal pains and normal—not tetanic—contraction of the uterus.—*St. Petersburger Med. Wochenschrift*, May, 1892.

METABOLISM IN ACUTE PHOSPHORUS-POISONING.

The works of Schmiedeberg and his pupils seem to make it certain that urea is formed from carbolic acid and ammonia, and the careful investigations of Schröder show that this union takes place in the liver. Whether this organ is the only portion of the organism where the formation of urea occurs, and whether all urea is formed in the above manner, remains to be proved. Wishing to establish some new facts in regard to the position of the liver in the metabolism of nitrogen, Dr. E. Münzer (*Centralblatt für Klinische Medicin*, June 18, 1892) made careful observation of all cases of phosphorus-poisoning coming into his clinic during the past year. There were eight cases, six of them fatal.

Acute phosphorus-poisoning in man takes the same course as that of animals. Death may occur in a very short time from paralysis of the heart. During this time, owing to the general and great depression of the organism, the metabolism of nitrogen is diminished, and the patient passes less nitrogen through the urine than a man in a starving condition.

Parallel with the decrease of the whole amount of nitrogen given off, the quantity of urea passed is also very small, although in comparison with the whole loss of nitrogen, the urea given off in this stage need not be lessened, and may form ninety-one per cent. of the whole amount of nitrogen.

If the patient survives this stage, the injurious action of the phosphorus upon the organic albumin appears, causing an increased and abnormal decomposition of albumin. The whole amount of nitrogen given off increases rapidly, and reaches, especially considering the starved condition of the persons poisoned, an abnormally large quantity,—two and a half, three and a half, four and a half drachms for the day. How is this nitrogen divided in its component parts? First of all, the urea nitrogen appears to be lessened by seventy to eighty per cent., and the ammonia nitrogen much increased,—ten to eighteen per cent. Does this indicate the formation of urea in the liver? And is the increased NH_3 given off the result solely of the diseased liver and its lessened synthetic function? Dr. Münzer thinks that cannot be claimed. It must not be forgotten that the investigations of phosphorus-poisoning by H. Meyer established an abnormal development of acid products of metabolism and a lessening of the alkalescence of the blood. The abnormal acid products which occur here—sarcolactic acid, etc.—are neutralized by the ammonia of the organism.

He thinks the following gives considerable ground for the belief that we only have to do in these cases with acid-neutralizing ammonia:

The dog is known to be an animal which is unable to produce any acid-neutralizing ammonia, and hence in the experimental introduction of acids is destroyed by the withdrawal of fixed alkalies from the blood. Hence, after poisoning with phosphorus, there should be, in consequence of the diseased liver, an increase of ammonia in the urine, if the increased loss of ammonia in man is due to the diminished synthesis of NH_3 and of CO_2 in the urea. Two

experiments gave absolutely negative results, although the animals died from the poison; although the urine found in the bladder gave a marked acid reaction, and the liver had become entirely fatty, there was no increase of NH_3 in the urine.

Dr. Münzer believes that the increase of ammonia found in persons poisoned with phosphorus is caused by an abnormal production of acids in the organism. As to the condition of the blood, the decreased alkalescence of the blood may be explained in the destruction of red blood-cells, which is considered by most authors one of the results of phosphorus-poisoning.

O. Taussig thinks he can show from his investigations that there is no destruction of the red blood-cells in man following phosphorus-poisoning, although there is a rapid destruction of them in hens. The cause of the abnormal acidity in man after phosphorus-poisoning must be sought in the abnormal metabolism of the individual organic cells.

THE INFLUENCE OF THEOBROMINE, CAFFEINE, AND A FEW SUBSTANCES BELONGING TO THIS GROUP UPON THE ARTERIAL BLOOD-PRESSURE.

W. Cohnstein reaches the following conclusions:

1. An increase of the blood-pressure following the use of theobromine cannot be detected.

2. No constant influence upon the frequency of the pulse could be noted.

3. No influence upon the energy of the cardiac contractions (shown by a change in the height of the pulse-wave) could ever be observed.

4. After very large doses there was finally a gradual sinking of the pressure, occasionally also a lessening of the pulse frequency.

5. Theobromine in physiological doses has no perceptible action upon the heart and vascular system of mammals.

The direct improvement of the heart action and pulse, which some have ascribed to theobromine, occurs only secondarily, as the result of freeing the organism of harmful fluids by means of the diuresis brought about by the theobromine.

As for caffeine, Cohnstein agrees with most observers in holding that—1, in small doses it produces an increase of the arterial blood-pressure, while larger doses prevent this increase; 2, that the influence upon the blood-pressure is the result of the changed condition of irritability of the vaso-motor centre caused by the caffeine; 3, caffeine has a direct action on the heart, showing itself in the pulse frequency and wave height, first as an irritation and then as a paralysis; 4, the heart-muscle is affected by caffeine in precisely the same manner as the skeletal muscle; 5, the action of caffeine upon the heart-muscle differs from that of helleboreine of the digitalis group.

Ethyltheobromine kills warm-blooded animals with partly clonic and partly tonic convulsions proceeding from the brain, the occurrence of which can be prevented by the use of artificial respiration. Under toxic doses the blood-pressure sinks gradually. Death follows with symptoms of paralysis of the spinal cord and the medulla oblongata.

Ethoxycaffeine showed no action upon the blood-pressure.

Phenoxycaffeine and methylcaffeinehydroxyd reduced the blood-pressure slightly, the pulse decreased in frequency, and the height of the pulse-wave increased from four to five times the normal.—*Schmidt's Jahrbücher*, No. 6, 1892.

QUICKSILVER VAPOR FROM MERCURIAL OINTMENT.

In spite of the investigations of Reuk, Kunkel (*Sitzungs-Berichte der Physikalisch-Medicinischen Gesellschaft zu Würzburg*, No. 2, 1892) has found it hard to understand how any great amount of quicksilver could be scattered in dust, or be given off from the gray salve in the form of vapor. The salve consists of fat enveloping the droplets of quicksilver. Kunkel tried a new experiment to test this. He prepared a box, the surface area of which was known to him, and smeared it with a certain amount of the salve, and then passed air slowly through it, the box receiving the air on its exit in an absorbing apparatus, so that the quicksilver could be collected and measured. This exceedingly delicate experiment was most carefully performed, and the result showed that quicksilver is given off in vapor from the mercurial ointment. Therefore it can be breathed by the patient who has occasion to use the salve. Just how great a quantity he would breathe is difficult to determine. But it is important to note that, while "dust" remains in the respiratory passages and is reabsorbed, vapor like air would be, at least in part, given off again; so the danger of poisoning through vapor is much less.

SALOPHEN AND ITS THERAPEUTIC USE.

Dr. Josef Fröhlich (*Wiener Medicinische Wochenschrift*, Nos. 27 and 28) writes of his trial of salophen. He used it in thirty cases, and finds it a rapidly-acting remedy for acute articular rheumatism. He finds its action equally as good as that of either sodium salicylate or salol, while it is preferable to them because it is not hygroscopic, and can be used in every form. In further contrast to the above-named remedies, it has no taste; and, finally, most important of all, even when given in large doses for a long time, it produces none of the unpleasant results of the other two. Neither loss of appetite, nausea, vomiting, dizziness, buzzing in the ears, nor occasional conditions of collapse follow its use. It is decomposed in the intestine, and therefore any action upon the stomach is prevented. In all his thirty cases Fröhlich did not observe any stomach trouble, and only three times were there temporary cerebral symptoms. Its action upon the six cases of chronic articular rheumatism was not uniform. In the first case it was good, but in three following ones it availed nothing.

As an antipyretic, salophen in every dose and every form of administration, was entirely without action.

POISONING BY CARBOLIC ACID.

Barratt reports in the *British Medical Journal* for August 27, 1892, the following case:

C. W., a rickety child, aged four years, swallowed at the Birmingham Workhouse Infirmary a quantity of carbolic lotion containing one hundred and eighty grains of carbolic acid. The child, when discovered, was lying unconscious on the floor. It was at once given some salt and water; this was swallowed, and shortly afterwards some of the contents of the stomach were vomited, and the child showed signs of returning consciousness. It soon relapsed, however, and a quarter of an hour later was completely comatose, with dilated pupils, insensitive corneæ, and a barely perceptible pulse at the wrist. The circulation was kept up with hypodermic and rectal injections of brandy, while the stomach was washed out with three pints of tepid water, one ounce of olive oil being subsequently injected. The pulse, which was 166 when the child had recovered sufficiently for it to be counted, gradually increased in force and diminished in frequency, so that, at the end of two hours, it was 124 and regular. The pupils were now contracted, the face flushed, the skin perspiring very freely, and the limbs were occasionally moved. Next morning the temperature was 102° F., and the child had vomited several times. It was kept on milk and beef-tea for several days, and made an uninterrupted recovery. The first portions of the urine were passed into the bed. A specimen obtained eighteen hours later was light yellow, free from albumin, did not darken when allowed to stand, and did not yield more than the normal quantity of indigo.

THE TREATMENT OF HEAT-STROKE.

In the *Medical News* for September 3, 1892, Coplin and Bevan, in an interesting article on the effects of heat in sugar-refineries, give the following directions as to the treatment which, in their opinion, gives the best results in cases of thermic fever. They state that the treatment of cases in which there is elevation of temperature may be summed up in the injunction, "Increase the peripheral circulation;" anything that will accomplish this end will help the patient. If the skin can be made intensely red, and the pulse, which may not be perceptible at the wrists, can be brought up, the patient will immediately feel better, and in the large majority of cases consciousness will at once return. While under ordinary circumstances the restoration of the activity of the cutaneous circulation is easy, in thermic fever it is not so. In the treatment of our cases, large undressed sponges, gritty and hard, were freely used by two muscular assistants. In all of the cases except the fatal one, and another to which we shall refer later, cutaneous redness was secured in from three to fifteen minutes. With the restoration of an active peripheral circulation the symptoms rapidly subsided. Remedies that attend this end may here be used with advantage. Atropine seems certainly indicated, and in our hands has given excellent results. If less than $\frac{1}{60}$ grain be given hypodermically at a dose, the medicament is wasted; in severe cases, $\frac{1}{40}$, or even $\frac{1}{30}$, grain may be used, preferably in two doses, with a brief interval,—say, of five minutes.

Aromatic spirit of ammonia acts happily, and is the only medicament which acts with equal promptness when administered by the stomach or subcutaneously. It should be given in doses of from ½ to 1 drachm in milk. Morphine, in doses of not more than ¼ grain, may be advantageously combined with either aromatic spirit of ammonia or atropine. Strychnine does good in cases in which there is great

prostration or inordinate muscular weakness. The nausea is best combated with cracked ice.

Towards the close of the epidemic the advisability of employing amyl nitrite was discussed, on account of the promptness with which it induces a peripheral determination of the blood. The drug was used in but one case, but with the most gratifying results. A "pearl" containing three minims was crushed in a handkerchief, and the patient allowed to inhale the vapor freely. The headache and cramps immediately disappeared like magic, and the temperature, which had been 102.6° F., fell in a few minutes to 99° F. No other medicament was used. Half an hour after the treatment the patient felt entirely comfortable, with the temperature normal, and after the administration of morphine sulphate, grain $\frac{1}{4}$, and atropine sulphate, grain $\frac{1}{100}$, hypodermically, he proceeded home, and reported for work on the following day. Although they did not employ nitro-glycerin, it seems probable that it might be advantageously substituted for amyl nitrite. Ice applied to the head will alleviate the headache.

The reader has, no doubt, ere this expected that each successive sentence must bring some reference to the cold bath. While they believe the cold bath to be a most efficient adjunct in the treatment of the hyperpyrexia, they would at the same time urge that careful judgment be exercised in its employment. Given a patient with embarrassed peripheral circulation, with empty capillaries on the exposed surface and the blood stagnant in the glandular viscera, one should hesitate in the use of an agent that admittedly favors the very condition to be combated. The efficiency of the bath depends largely on the accompanying friction. In seventy-five per cent. of the cases here reported the cold bath was resorted to.

In all cases the routine treatment may be summed up as follows: The patient's temperature was taken; he was then placed in a low bath-tub, in which the water was exactly the same temperature; he was rubbed with large gritty sponges until redness of the skin was induced; this was followed by the turning on of the spray, the impact of which maintained the counter-irritation. After five or ten minutes the patient was removed from the bath and thoroughly rubbed with the sponges. If the temperature had not sufficiently subsided, he was again placed in the bath, and the process repeated until the temperature was reduced to the neighborhood of 100° F. In the mean time he was given, either by the stomach or hypodermically, $\frac{1}{20}$ grain strychnine, $\frac{1}{100}$ grain atropine, $\frac{1}{6}$ grain morphine, and 20 drops of the tincture of digitalis, followed by a teaspoonful of aromatic spirit of ammonia in a glass of milk. The cases did well, and while the authors would not disparage the employment of the cold bath, they would insist that its efficiency must depend upon the energy of the friction to secure a cutaneous afflux of blood.

In mild cases, in which the temperature was 101° or 102° F., from 5- to 10-grain doses of antipyrin or antifebrin relieved the headache, and usually the cramps, and reduced the temperature. Coplin and Bevan have not observed any unfavorable symptoms after the use of either of these drugs in properly-selected cases. When they have used them, they have usually accompanied their administration with applications of cold to the head, either by the ice-cap or the cold spray, preferably the latter. The cold spray, if applied to the head and nape of the neck, will rapidly reduce the temperature, and time may be gained by using friction upon the back and upon the chest and extremities at the same time.

Alcoholic stimulants should be used in the large majority of cases. They favor increase of the peripheral circulation and invigorate the flagging heart.

Bloodletting was resorted to in a single case, and upon the following indications: When brought into the accident-room the temperature of the patient was 103.6° F., and he presented no extraordinary symptoms. He was given $\frac{1}{60}$ grain atropine, with $\frac{1}{6}$ grain morphine. Friction was applied to the chest and trunk; he was directed to lean over the bath-tub, and the cold spray was applied to the head, neck, and shoulders. The respiration became impeded; the man gasped for breath; the lips, ears, and finger-nails became blue, but not the general surface. Cheyne-Stokes breathing appeared. The man was bled to the extent of eight ounces, with immediate relief. He was sent to the Pennsylvania Hospital, and returned to work the following day.

The cold spray has in our hands been a most beneficial agent. The temperature of the water used varied from 40° to 55° F., but the force with which it was applied enhanced its usefulness, as the process practically amounted to active flagellation without inducing pain, and was promptly followed by redness.

As soon as active treatment was discontinued, or when practicable during its continuance, the patient was kept beneath the cool-air blast. One who has never seen the benefits of such a blast cannot appreciate its utility. Under active friction of the skin in the air-blast in

many cases the temperature promptly subsided. The headache was invariably alleviated. The cool-air blast is, in their opinion, a most valuable adjunct. With it should be conjoined active friction, or, if the patient is quiet, he should be in the recumbent posture, covered with a thin sheet, leaving the face free.

The regulation treatment in cases in which the temperature was subnormal (heat exhaustion), consisted in the administration of stimulants, usually alcoholic, although hot drinks may with advantage be combined with alcohol. Rest in the recumbent posture is imperative.

THE TREATMENT OF TYPHOID FEVER BY THE COMBINED USE OF BATHS AND INTESTINAL ANTISEPSIS.

Santa Maria y Bustamante (*Boletin de Medicina Naval*, April 15, 1892; *Revue Internationale de Bibliographie Médicale, Pharmaceutique et Vétérinaire*, June 25, 1892) has proposed for the treatment of typhoid fever the combined use of intestinal antisepsis and lukewarm baths at a temperature of 30° C., believing that in this way the danger of producing cardiac collapse by cold bathing may be averted. According to the case, the author administers beta-naphthol with carbon, salol, or resorcin, allowing the patient to remain in the bath-tub for a period of fifteen minutes, applying, at the same time, cold affusions to the head. Of thirty-seven cases treated by this method, and in which there were present symptoms of cardiac collapse, in only four cases fatal results ensued.

THE ABORTIVE TREATMENT OF FACIAL ERYSIPELAS.

In an article by Ch. Talamon upon the above subject (*La Médecine Moderne*, July 7, 1892), the author reports five cases in which the employment of corrosive sublimate by means of irrigation gave the most excellent results. The drug is dissolved in ether, and the application made by an irrigating apparatus. In summarizing his method, the author makes the following statements: 1. The ethereal solution employed must be of the strength of one per cent. 2. A small apparatus, to be managed by the hand and of sufficient pressing force, should be used. 3. The duration of the treatment and the force of the irrigating jet must be taken into consideration. 4. The thickness of the patient's skin, the depth of the dermic infiltration, and afterwards the resistance of the diseased part, the projection over the healthy skin of the affected borders, and the existence or absence of bullæ must also be taken into account. 5. Vesication of the skin is not to be feared. 6. Treat lightly the centre of the diseased part; the irrigation is to be applied chiefly and largely at the periphery, and especially over the projecting borders. 7. Irrigate systematically the whole of the affected part, beginning at about one or two centimetres over the healthy skin, and follow this line around in order to prevent the extension of the erysipelatous inflammation. 8. Bathe only the tumefied superior eyelids, but irrigate extensively over the inter-superciliary space, and over the superior and external orbital border, in order to intercept the passage of the disease towards the scalp. 9. Cover the face, then, with compresses soaked in borated water, keep them wet, and renew them frequently. 10. One or two good irrigations are sufficient when they are properly made; the others should be of short duration. Pay especial attention to the peripheries of the diseased part, where the erysipelas has a tendency to pass over the limited area. 11. Over the neck, the back, the trunk, and the extremities the irrigations should be more prolonged than over the face. 12. Inform your patient before the beginning of the treatment that the irrigation may produce a painful smarting, but that this is not so painful as the distention of the tissues caused by the erysipelatous infiltration; that the face may swell up; that crusts may form; phenomena all which the disease itself may and does produce. 13. Do not detach the crusts with the fingers; leave them alone, to be removed by themselves or under the application of the borated compresses.

By following the preceding rules, the author adds, all forms of erysipelas may be absorbed in from one day to a week, and even when least successful the method may prevent the extension of the disease and diminish its duration and virulence.

NEW DRUGS.

A review of some of the Indian medicinal plants is made in the *Zeitschrift d. Allg. Æst. Ap.-Ver.*, No. 13, 1892 (*Les Nouveaux Remèdes*, July 8, 1892), as follows: Adulsa, the leaves and branches of the *Adhatoda vasica* (Acanthaceæ), is reputed in India as an expectorant, and is employed in the treatment of pulmonary phthisis and other affections of the chest; the leaves are also used against asthma. Balbij, the seeds of the *Abutilon indicum* (Malvaceæ), is credited

with diuretic properties. Daruri, the seeds of the *Argemone mexicana* (Papaveraceæ), furnishes an oil considered as a good remedy against dysentery and other diseases of the intestinal tract. Gelaphal, the fruit of the *Randia dumetorum* (Rubiaceæ), is said to possess emetic properties, and is used in the treatment of dysentery as a substitute for ipecacuanha. Two or three fruits are given as a single dose. Similar to the *Cocculus indicus*, the randia produces a narcotic effect on fish. To hurmal, the seeds of the *Peganum harmala* (Rutaceæ), properties similar to those of Indian hemp are ascribed. Kaïphal, the bark of the *Myrica sapida*, is employed as a stimulant in bronchitis and affections of the chest in general. Kaknaj, the fruits of the *Writhania coagulans* (Solanaceæ), is used by the natives to curdle milk. Kâladâna, the seeds of the *Ipomœa hederacea* (Convolvulaceæ), is officinal in the Indian Pharacopœia (1868), and of it an extract, a tincture, and a resin are employed as substitutes for similar preparations of jalap; the resin is the active principle, and it is commonly considered as a gentle cathartic. Kanyal, the seeds of the *Nelubium speciosum* (Nymphæaceæ), the flower of the lotus, constitutes an excellent food, and as such reputed in India and China. Kawun, the fruits of the *Helicteres isora* (Sterculaceæ), is employed in popular medicine in the treatment of children's diseases. Maïda-lakri, the bark of the *Tetranthera laurifolia* (Laurinaceæ), is used by the natives as a remedy against diarrhœa and dysentery. Suffed bahman, the root of the *Centaurea behen* (Compositæ), of which there are two varieties,—the white and the red,—is prescribed by the Arabian physicians as an energetic aphrodisiac. Talimkhana, the seeds of the *Hygrophila spinosa* (Acanthaceæ), is reputed as an aphrodisiac; the root of the plant is employed as a diuretic and in the treatment of hepatic affections. Utanjan, the seeds of the *Blepharia edulis* (Acanthaceæ), is found in every drug-store, and its therapeutic employment is varied.

CUPREINE AND ITS DERIVATIVES.

According to E. GRIMAUX and J. V. LABORDE (*La Tribune Médicale*), cupreine, extracted from *Quina cuprea*, is an alkaloidal phenol, which, by substitution of the radicle CH_3, gives origin to quinine, and, by substitution of the radicle C_2H_5, to a homologue of quinine,—the quinethyline. The formula of cupreine is $C_{19}H_{21}Az_2O,OH$; that of quinethyline, $C_{13}H_{21}AzO,OC_2H_7$. Another derivative, the quino-propyline or propylo-cupreine, is represented in the formula of $C_{19}H_{21}Az_2O$, OC_3H_7. The salts of three bases—cupreine, quinethyline, and quino-propyline—have been studied physiologically in a series of experiments, with interesting results.

In regard to cupreine chlorhydrate, this possesses antithermic and analgesic properties. It acts primarily, its influence being decided upon the sensory and perceptive centres of the brain, and in this respect resembles quinine; the toxicity of cupreine, however, is less pronounced, from the fact that tremors are not produced by this drug as in the case of quinine.

The actions of the sulphate of quinethyline are similar to those of the chlorhydrate of quino-propyline, and may be summed up as follows: Unlike quinine, which produces in the normal animal only a comparatively slight antithermic effect, both quinethyline and quino-propyline cause a marked lowering of the normal temperature. The activity of quino-propyline, other things being equal, is greater than that of either of the other two substances.

This antithermic action is, at the same time, powerful and rapid, and comes on together with the stupefying and analgesic effects produced, showing that a simultaneous and equally dominant influence is exercised upon the sensory and perceptive centres.

The results of the experiments, so far, appear to demonstrate that the new remedies possess important therapeutic properties, and one of the authors has already noticed success following the ingestion of cupreine in one case.

THE EMPLOYMENT OF SULPHORICINIC ACID AND THE SULPHORICINATES.

These medicaments, recently introduced into practical medicine by Berlioz and Ruault, may be prescribed in the following manner, as recommended by BARDET in his "Formulary" of the new remedies (*Journal de Médecine et de Chirurgie Pratiques*):

1. SULPHORICINATED PHENOL.

℞ Sulphoricinate of sodium, 60, 70, 80 grammes;
Pure phenic acid, 40, 30, 20 grammes. M.

This mixture, in either proportion, is employed against *diphtheria*.

2. SULPHORICINATED NAPHTHOL.

℞ Sulphoricinate of sodium, 90 grammes;
β-naphthol, 10 grammes. M.

Two dessertspoonfuls are placed in one litre of water, and the resulting emulsion is employed for douching purposes in the treatment of *ozæna*, the bad odor of which is said to rapidly disappear.

3. SULPHORICINATED CREOSOTE.

℞ Sulphoricinate of sodium, 85 grammes;
Beechwood creosote, 15 grammes. M.

This mixture is employed as such, or in the form of emulsion (two dessertspoonfuls in a glassful of water), in the treatment of ulcerative laryngeal tuberculosis.

4. SULPHORICINATED SALOL.

℞ Sulphoricinate of sodium, 85 grammes;
Salol, 15 grammes. M.

This mixture is used in the treatment and dressing of wounds.

All these different solutions are prepared by the aid of heat; on cooling, those of phenic acid, salol, and creosote become transparent shortly or after a certain time. The beta-naphthol solution remains always cloudy.

DEATH FROM THE INJECTION OF SESQUICHLORIDE OF IRON INTO THE UTERUS.

DR. H. PLETZER (*Centralblatt für Gynäkologie*) adds one more to the list of fatalities resulting from intrauterine injections. A day-laborer's wife was admitted to the gynæcological clinic to be treated for retroversion of the uterus and chronic endometritis. In 1881, in the first year of her married life, she contracted syphilis from her husband. In the summer of 1881 she experienced a hemiplegia, from which some lameness still remained in the extremities of her right side at the time of her admission. She had survived seven confinements; five resulted in abortions or still-births; the two other children each lived but two weeks.

On the 11th of November copious shreds of proliferated mucous membrane were removed from the uterine cavity, and the mucous membrane cauterized with iodine. The replaced uterus was held in position by a Hodge pessary. Now a fibroid as large as a hazel-nut could be discerned, adhering to the back wall of the uterus, towards the peritoneal surface; it was not pressed upon by the pessary. After four days of rest in bed the uterus was washed out on the 16th and 18th of November with a two-per-cent. solution of carbolic acid, and then cauterized with tincture of iodine. On the 20th of November the woman's period occurred without any trouble, it being more profuse than usual, and lasting until November 26. From the 27th of November to the 3d of December the same treatment of the mucous membrane of the womb was used every second day. On December 3 there was a more marked bloody color observed in the fluid flowing out. There was a slight passage of blood during the night of the 4th of December, and as there was still more bleeding when the washing out was done at quarter past ten o'clock the next morning, the use of iodine was omitted in the hope of stopping the hemorrhage by the injection of sesquichloride of iron. This was carefully done, but the patient complained of pain. This sensation increased in the following fifteen minutes to severe colicky pains. She had great pain in her abdomen, her skin was livid, and pulse small and very frequent, with stertorous breathing.

Subcutaneous injections of ether, and the application of ice to the abdomen, only produced temporary improvement; the difficulty of breathing increased, the senses became benumbed. All attempts to increase the power of the heart were vain. At half-past twelve, or two and a quarter hours after the attack, death occurred.

The autopsy on the following day revealed the following conditions: On the upper surface of the left optic thalamus was a flat, sunken-in portion of a yellowish color and about the size of a ten-pfennig piece. This consisted of a moist, yellow, tolerably tough tissue. In the right heart were isolated thrombi between the trabeculæ. In the veins of both lungs, especially the large veins, were small, reddish-blue, tolerably firm clots, which were not adherent to the walls, and did not close the lumen, and were readily moved. Reaching from the iliac vein to the division of the common iliac vein, and only slightly adhering to the vein-wall, was a blackish-brown clot, about one and one-eighth inches long. The vein-wall was smeared a greasy brown at the seat of the thrombus.

There was a defect in the right wall of the uterine cavity, somewhat above the isthmus, running lengthwise of the womb, for a distance of a little over half an inch; it was like a tear in the mucous membrane and muscle, apparently less than a quarter of an inch deep. The surrounding mucous membrane was rough. Small veins reached to the bottom of the defect, which were filled full of a dry, black, very firm clot, so that the whole felt like a net of thick-knotted strands. One of these veins could be followed like a knotted strand, as thick as a catheter, in the pelvic fascia as far as the iliaca communis. The cellular tissue about the thrombosed veins, especially near the uterine defect, was of a brownish color. The blood was found fluid throughout the body.

In spite of the frequent use of weaker or stronger caustic applications to the uterus, there occur very few deaths, so it appears important to

call attention to the possible dangers attending it. In this case the action of the chloride of iron solution is explained by the fact that the fluid was probably taken at once into the open veins of the defect in the uterus. It is possible that this tear occurred during one of the earlier syringings, and that the hemorrhage which the iron was used to stop, resulted from it.

AGATHINE—A NEW ANTINEURALGIC.

DR. E. ROSENBAUM (*Deutsche Medizinal-Zeitung*) calls the attention of his colleagues to agathine, a new drug prepared by a chemist in Frankfort-on-the-Main. Chemically it is salicyl-α-methylphenylhydrazone, obtained by condensation of salicylaldehyde with α-methylphenylhydrazine.

It is odorless and tasteless, insoluble in water, soluble in alcohol and ether, and can be melted at 166° F.

After it had been tried upon animals, it was first used in the city hospital, and then by other physicians in Frankfort. Dr. Rosenbaum gathers their reports, showing that it has been used with good results in the treatment of sciatica, neuralgia, rheumatism, and articular rheumatism. The action does not appear to be an immediate one, but several stubborn cases of the diseases mentioned yielded to it when given in doses of 7½ grains three times a day. There appear to be no bad accessary symptoms, even when it is used for a long time. Only one patient is reported to have suffered from headache, which occurred half an hour after taking the dose, and lasted one hour.

THE THERAPEUTICS OF DIPHTHERIA.

DR. L. SCHWARZ (*Internationale Klinische Rundschau*) says he claimed as early as the seventies that diphtheria was a disease caused by a microbe. He lost two patients with this disease, and banished the rest of the family from the house for several months, having, as he supposed, a most thorough disinfection of the whole premises in the mean time. After three months, upon the return of the family to the house, two more children were stricken down and died of this dread disease.

Dr. Schwarz thinks all the varied treatment by means of cauterizing and painting the diseased places are futile, largely on account of the impossibility of carrying them out thoroughly, especially when the patients are children.

For a time he was much pleased with flowers of sulphur in powder form, which he had blown into the mouth, throat, and nose with a blower or through a simple paper tube or straw. Still even this useful remedy was not all that could be wished, and he tried adding carbolic acid to it. This gave still better results, but some could not bear the carbolic acid, and so many developed symptoms of poisoning that he had to abandon it.

Since that time he has made use, during three years, of sozoiodol. At first he always mixed it with flowers of sulphur, and had it blown in every four hours. After the second application the temperature falls, the dirty gray covering becomes lighter, and the general condition is better. At the end of twenty-four hours the temperature is usually between 97.5° and 99.5° F.; even in the most unfavorable cases it never rises above 100.3° F. It seems as if the sozoiodol, being so easily soluble, penetrated to the most narrow sulci of the tonsils, and there destroyed the bacilli, besides passing easily into the circulation and making way with reabsorbed streptococci.

During the past six months Dr. Schwarz has passed through a small epidemic of diphtheria in one quarter of Constantinople. The source of infection was the mission school, which furnished most of the patients. Up to the date of writing he had observed seventy patients; twenty-four of these were sent to hospitals, few of them recovering. Forty-six he treated personally; of these, twenty-three recovered fully in a short time; eighteen continued to suffer from paralysis of the pharynx and soft palate for several weeks; five died. There were thirty-four between one and four years old and twelve between that and twelve years.

In twenty-two cases the diphtheria was confined to the tonsils, in ten the pharynx and nasal passages were also involved, and in fourteen the larynx was involved. Of those who died, two were not seen until the fourth and sixth day, and had already been cauterized several times. One refused all nourishment, and died from exhaustion.

This shows a very favorable result. One great trouble with diphtheria is the fact that the physician rarely sees the patient until after two or three days of illness. Cases seen at the start are all more quickly cured.

Some of the children seen on the first day had dirty gray spots on the tonsils, which could not be certainly diagnosticated as diphtheria; yet, as they came from families where the disease existed, and the pseudo-diphtheria is not only difficult to distinguish from the disease itself, but often develops into it, he

proceeded at once with the same treatment for all these cases. He found it a good plan to have the child take several swallows of water before making the examination, thus freeing the throat from mucus. On finding suspicious places, he at once ordered for children under three years sodium-sozoiodol, gr. xlv; sublimated sulphur, gr. clxxx. For children up to five years, a fifty-per-cent. mixture; and for still older children, pure sodium-sozoiodol, and had this blown into the mouth and nose every four hours. Even when there were no signs of the pharynx and nose being involved, he had the powder put in to prevent this extension, if possible. Besides that he gave the children a tablespoonful every hour of a solution of chlorate of potassium, fifteen to twenty-two grains to six fluidounces. He paid great attention to the action of the heart, often ordering a stimulant, usually a decoction of cinchona with cognac or Malaga wine. He required a fluid diet, such as milk and soup with yolk of egg, given frequently to keep up the strength. For swelling of the glands, he had mercurial ointment rubbed in. The powderings were kept up for several days after the process was complete, and he had observed no relapse. The bad form, complicated with retention of the urine, of which he only had two cases, he combated with large doses of calomel. He thinks it would be of great interest if the action of the sozoiodol upon the pure cultures of the bacilli should be tested. At present it is not possible to determine whether its action is more or less favorable, on account of the admixture of saliva.

TWO CASES OF DIABETES MELLITUS TREATED WITH JAMBUL.

Dr. Gerlach (*St. Petersburger Medicinische Wochenschrift*) reports two cases of diabetes mellitus treated with jambul. Neither of them gave at all satisfactory results. The urine was all carefully collected, and a tabulated daily statement kept, which showed by a curve the slight decrease in sugar during the use of the jambul. The first patient ate very moderately, and was slightly improved; her case was simple and capable of improvement. The second patient was a man whose desire for food was great; his greediness, no doubt, was in part the cause of his growing worse instead of better under treatment. However, Gerlach learned afterwards that Professor Kobert makes use of the extract of the *whole* fruit with good results, while in the cases reported he (Gerlach) had used the seeds. Perhaps the active principle of the remedy is not contained in the seeds, but in the remaining portion of the fruit.

THE USE OF CHLORINE AS AN ANTIDOTE FOR COBRA VENOM.

Dr. Vincent Richards has contributed, through Warden, to the *Indian Medical Gazette* for July, 1892, the results of his experiments in cases of poisoning by cobra venom. The experiments are given in some detail, and the conclusions to be reached are that chlorine is not an antidote to cobra venom. If allowed to act sufficiently long upon the venom, it may possibly lessen or destroy the poison, but then it would be no better than potassium permanganate,—a local chemical antidote, and much less harmful drug.

Other experiments by Kanthack show that cobra poison diluted with chlorine-water, and allowed to stand for twenty-four hours, caused death in twenty-four hours when injected into a rat, while the same dose of pure venom caused death in one hour. Cobra venom and chlorine solution, after standing for five days, lost its toxic properties.

CHLOROFORM ADMINISTRATION.

In the *Edinburgh Medical Journal* for September, 1892, Dr. Aitken has contributed an article on chloroform administration.

During the recent vigorous discussion on chloroform administration little or no reference was made to two cardinal points. These are—

The peculiar sensitiveness of the puerperal woman to the drug.

That there must be for every person, idiosyncratic or not, a minimum dose, which, if not exceeded, is absolutely safe.

In respect to the first statement, it is to be noted that the sensitiveness is twofold: *a*. Only a very small quantity of chloroform is needed to produce narcosis. *b*. It is not necessary, in order to abolish pain, to produce complete unconsciousness; but further pain is speedily allayed if the inhalation be given at the right moment,—*i.e.*, at the very commencement of a uterine contraction. With our present means we have great difficulty in achieving our purpose; for just as the pain comes on we have to fumble with a bottle, and before we have the chloroform applied the pain is either far advanced or gone. Hence the frequent resort to complete narcosis, which is quite unnecessary, since we know that a woman can be at the same

time rendered free from painful sensations and able to converse. As regards the second point, it seems that, obvious as it is, we almost universally violate the principle involved, with the sad results the journals are constantly recording.

It may be asked quite justly, How can we know, with our usual apparatus, when we have exactly reached the minimum and safe dose? The answer may be decidedly given, We cannot know. A patient, to whom the author administered the drug with a mask, took a larger amount of chloroform than that ordinarily necessary to produce complete narcosis. Besides, it may be accepted that if a towel be used, so free will be the supply of chloroform in a given time, that at the moment complete narcosis is induced there still remains some of the drug yet to take effect in the system. In Aitken's opinion, the only safe way is to give drop by drop, and so one can be quite sure of the moment of narcosis, or, at any rate, feel confident that he has no unknown quantity to reckon with. It may be objected that this method of drop doses takes a long time. But we must always realize that of the two parts of an operation, the chloroform administration is in most cases by far the more important; as Mr. Chiene has wisely and well said, "We are gradually advancing to the death-point." No operator refuses to take time to the cutting part, however much demand of time and patience is made upon him. The writer's experience has been that the slow method requires much less chloroform, and the after-effect is much better. For example, he assisted at a long and tedious operation, but after a time the patient seemed to be actually asleep, and the cutting went on for a considerable period without any inhalation. On another occasion he succeeded in producing narcosis for about one hour with half an ounce of chloroform.

Dr. Aitken has devised an instrument in order to carry into practice the matters he lays stress upon. It consists essentially of a box, with inner and outer cylindrical casings. The outer cylinder is perforated for the nose and mouth-piece, for the air-holes, for the filling funnel, and for the slot. The inner cylinder is perforated by the breathing-holes, and revolves inside the outer cylinder in such a manner that the holes in the inner and outer cylinders are open and shut simultaneously. Further, some of the perforations open directly into the general cavity, while most of them communicate with it only through the sponge cavity. The slot controls the revolution so as to secure this, and there is a sheet of perforated zinc, cutting off a compartment for the sponge. There is also a small funnel, into which chloroform can be dropped through a hole in the cylinders into the sponge cavity. The instrument is fitted with a lid. By moving the knob in one direction all the holes will be closed.

In obstetric practice the sponge can be well soaked with chloroform, and intrusted either to the nurse or the patient herself, with the instruction to keep the inhaler closed during the intervals; but as soon as there is any indication of pain, the knob is to be pushed back, thus opening the holes and the apparatus applied, but to be at once removed on the cessation of the contraction and the holes closed. With this contrivance we are at once ready at the required moment, and it is also quite safe. But, though the inhaler is chiefly intended to meet the requirements of midwifery, it is hoped that it may be adopted in general practice. 1. It seems well adapted for the slow method, as it permits almost no chloroform to be dissipated. 2. It can be applied and removed at any moment. 3. It permits of a free dilution from the large number of perforations. Lastly, it saves an enormous quantity of chloroform, which is in the ordinary method wasted.

THE ANTISEPTIC INTRAUTERINE INJECTIONS AFTER LABOR.

KEIFER, writing upon the above subject (*La Presse Médicale Belge*), condemns the use of the antiseptic intrauterine injections after a normal labor, basing his argumentation in that such a procedure hinders a physiological hæmostasis; destroys an element that may prevent relaxation of the uterus; diminishes the vital resistance of the injured tissues; lets in air that may itself be an origin of infection; and introduces pathogenic germs with the sound, notwithstanding the greatest precautions. These arguments, the author believes, are sufficiently strong to reject, through principle, the intrauterine injections after a normal accouchement. All physiological phenomena occur in a healthy individual without therapeutic interference, and it is folly to endeavor to combat an enemy that does not exist. It is no more reasonable to wash out the uterus after a physiological delivery than it is to apply injections after each menstruation, or to douche the urethra after each ejaculatory act. The non-occurrence, on the other hand, of any accident after the uterus has been washed out, is no conclusive proof of the efficacy or innocuousness of the injections; but a positive fact,

and which cannot be denied, is the poisoning, the condition of syncope which may be produced in the most normal cases, and where the injections are manifestly the cause.

THE THERAPEUTIC ACTION OF PROTEINE IN A CASE OF ACTINOMYCOSIS.

A case of actinomycosis of the neck and face, occurring in a young man, nineteen years of age, is reported by ZIEGLER (*Münchener Medicin. Wochenschrift*, No. 23, 1892; *Revue de Thérapeutique Générale et Thermale*, July 20, 1892), in which the injections of proteine produced satisfactory results. Surgical interference was opposed by the patient, though some scraping practised showed that the yellow granulations had invaded the muscular tissue. About two months after the patient had been admitted into the hospital, injections of proteine extracted from cultures of the *staphylococcus aureus* were begun. The injections were introduced into the infiltrated tissues, the procedure being followed by a slight pain, which only lasted for a few minutes, and after a few hours, by a slight feverish reaction, characterized by local redness, and pain extending a little beyond the point of injection. At only one time did the patient, following an injection, suffer general malaise and a rise of temperature to 39.5° C., preceded by chilly sensations. The amelioration, however, was noticeable; the tumefied condition of the left cheek disappeared almost entirely, and the inferior maxillary was again able to perform its normal movements. The author attributes these good effects to the injections of proteine,—a substance analogous to tuberculin in composition.

FORCED ALIMENTATION IN THE TREATMENT OF TYPHOID FEVER.

Reviewing the literature of the subject, with especial reference to the recent work of Pouritz, R. ROMME (*La Tribune Medicale*, July 21, 1892) favors the administration of a forced diet in the treatment of typhoid fever, but it must be of a liquid kind, since a solid one may and does tend to produce intestinal perforation. The experiments instituted by Pouritz were directed to study the amount of nitrogen ingested and that given off by the excretions, such as the urine and the fæcal matters. To study the effect of the two principal dietetic treatments, Pouritz placed two patients upon a light diet, giving them, in the course of twenty-four hours, in the form of milk and bouillon, about 40 grammes of albuminoid substances, 10 to 20 grammes of fats, and 100 to 150 grammes of hydrocarbons; this diet was continued in the febrile period as well as during the stage of apyrexia. In the same manner he subjected six other patients to a forced alimentation, ordering the ingestion of 160 grammes of albumin, 60 to 90 grammes of fats, and nearly 300 grammes of hydrocarbons, the articles of food consisting of eggs, boiled or broiled meat, dry-meat dust, bread, etc. In all cases the medical treatment was purely hygienic,—mouth-washing with borated water, abundant cooling drinks, alcohol in the form of wine, cognac, or Stokes's potion, and two daily baths at a temperature of 37° C., of a duration each of from fifteen to thirty minutes. The results of this method are given in tabular form, and from a close examination of them it is found that the percentage of assimilation is about the same in the two classes of cases,—that is, in the first category, we have a percentage of from 79 to 82; in the second it varies from 75 to 83. The superiority, however, of the forced alimentation is sustained, since in this case assimilation is as good as in the classical feeding, while the daily loss of nitrogen in the first instance (two to three grammes) is less. In a general way, this forced alimentation was well tolerated, and enhanced a good appetite, especially two or three days after the establishment of the regimen. The six patients all lived, and their typhoid condition was less marked than that of those subjected to the classical method. The diarrhœa diminished, and in one case there was a tendency to constipation. Nausea and vomiting were absent. The stools lacked that fetid odor peculiar to typhoid patients, and as to their consistency, this exhibited a normal condition. Diuresis was increased (two litres per day), and there was no albuminuria produced. The diminution of the fever was followed by a convalescence without complications, and there were no relapses, no slight febrile movements, no incidental diarrhœa. About the third or fourth day of apyrexia, the patients expressed a desire to get up. It is worthy of note, nevertheless, that in these patients the appetite during the period of convalescence was not so good as that exhibited by the patients subjected to light diet.

The statistics of Kissel are similarly interesting. This author treated seventy-nine cases of typhoid fever in children. These received daily 79 grammes of albumin, 40 grammes of fat, and 120 grammes of hydrocarbons, in the form of milk, soup, dry-meat powder, bread,

etc. As in the case of adults, the little patients stood well the relatively large quantity of food, and even exhibited a good appetite. Of these seventy-nine patients, two died, and these two had been given solid food, which caused perforation of the appendix vermiformis and the subsequent fatal peritonitis. Generally, the development of the disease was mild, and, in other respects, the results confirmed those obtained by Pouritz in the treatment of the malady in adults. Further commentary is not necessary.

SULPHATE OF SODIUM AND INTESTINAL ANTISEPSIS IN THE TREATMENT OF ACUTE DYSENTERY.

Of the remedies recommended in the treatment of acute dysentery, such as calomel, ipecacuanha, and sulphate of sodium, the latter is at present much lauded as a superior drug. According to E. GRUET (*Bulletin Général de Thérapeutique Médicale, Chirur. Obstet. et Pharm.*, July 30, 1892) sodium sulphate is absolutely innocuous and is well borne; it must, however, not be employed by itself, as it acts slowly, and is not powerful enough in certain forms of the malady. Associated with intestinal antiseptics, the drug under consideration is one of the most rapidly efficacious remedies in the treatment of dysentery. The majority of cases occurring in temperate or tropical climates yield to this medicinal agent. The author advises the following prescription to be used every day:

℞ Sulphate of sodium, 10 grammes;
Water, 200 grammes. M.

This mixture is taken during the day, in four doses, with an interval of three hours each time. Naphthol is at the same time given, of which 4 cachets, containing each 50 centigrammes, are prepared, one of these to be taken every three hours. An injection is also prepared by putting either 20 grammes of boric acid, or 25 centigrammes of naphthol, or still 50 centigrammes of phenic acid, in 1000 grammes of water.

During the whole treatment a milk diet should be ordered. The sodium salt should be continued until the stools assume their normal consistency and composition. It is rarely necessary to administer more than ten grammes a day. The ingestion of the naphthol should be preceded and followed by a few mouthfuls of milk, as in this manner the drug is well borne. If it should not be well tolerated, salol may be substituted for it. The injection should be warm, and used only once a day, generally at noon or a little after. The first day the solution of boric acid is to be employed, followed during subsequent days by those made with naphthol and phenic acid respectively. Towards the end of the disease, the author recommends nitrate of silver in the proportion of 20 or 30 centigrammes to 1 litre of distilled water. Warm fomentations over the abdomen with camphorated oil of chamomile may be applied, and later, generally in the evening, an injection of starch and opium, to diminish the tenesmus and relieve the intestinal pains that are often the cause of insomnia. Even after the stools have acquired their normal condition, it is well to continue the antiseptic injections for about eight days longer in order to prevent relapses or a change from the acute to the chronic type of the disease.

PULMONARY EMBOLI FOLLOWING MERCURIAL INJECTIONS.

Interstitial injections of mercury, so largely used at present in the treatment of syphilis, are sometimes dangerous. BLASCHKO, quoted by the *Revue de Thérapeutique Medico-Chirurgicale*, August 1, 1892, reports two cases in which the injections of mercury were followed by pulmonary symptoms. In the first case, the patient complained of thoracic pain, coughed, and had accesses of oppression. On the day after the injection, the respiration became difficult, and the patient coughed bloody sputa. The second patient also complained of pain in the side, coughed, expectorated bloody sputa, and had a little fever. The symptoms in both cases disappeared in about three days. In a third instance, the patient had violent attacks of cough after the injection. These symptoms are explained by the author as being due to emboli caused by the paraffin employed as a vehicle for the mercurial preparations which are insoluble, and are only suspended in the liquid. The writer believes that the mercurial injections give the best results in the treatment of syphilis, but that they must be administered by themselves, as in this manner they produce no untoward effects. The injections should not be so frequent in individuals affected with pulmonary troubles, especially phthisis.

THE TREATMENT OF ACUTE PNEUMONIA.

A. SALLARD (*La Médecine Moderne*, August 4, 1892) reviews at length the literature regarding the treatment of acute pneumonia, and, in summing up the subject, says that an uncomplicated case requires but a moderate interference: absolute rest, a liquid diet (bouillon and milk); 8 to 10 wet cuppings at the point of pain in the

chest; later, a few dry cuppings to lessen the dyspnœa; 60 to 80 grammes of rum or cognac, pure or diluted to suit the taste of the patient; 2 to 4 grammes of antipyrin (in cachets of 50 centigrammes each); 2 to 5 centigrammes of thebaic extract, in pill-form, to combat the insomnia. This is all that is necessary, as a general rule, to conduct the disease to a period of defervescence. A tonic medication (alcohol, ether, and caffeine) is the one *par excellence* to employ in secondary pneumonias complicated with Bright's disease or cancer, and in those of an adynamic or senile type. Pneumonias of drunkards require high doses of alcohol and the administration of the thebaic extract in doses of from 5 to 20 centigrammes. In pneumonias characterized by bilious symptoms, emetics and cathartics are indicated; and in the malarial forms, or in that occurring during an attack of influenza, the sulphate of quinine is one of the best remedies. In pneumonias of children, the medicinal treatment should be quite moderate: 15 to 20 grammes of pure rum, administered in grog or coffee, in dessertspoonful doses; a little chloral at evenings to combat any excitement or tendency to delirium, or, better still, warm baths of a quarter of an hour duration; and, if the dyspnœa is intense, one or two mustard-water baths of the same duration.

The following prescriptions may be used for adults:

1. Cordial Potion of Dujardin-Beaumetz.

℞ Dry extract of quinquina, 4 grammes;
Tincture of balm-mint, 30 grammes;
Tincture of cinnamon, 8 grammes;
Malaga wine, 90 grammes;
Syrup of bitter orange-peel, 30 grammes. M.

To be given in dessertspoonful doses in the course of the twenty-four hours.

2. Solution for Hypodermic Use.

℞ Benzoate of sodium, 3 grammes;
Caffeine, 2 grammes;
Boiling water, 10 grammes. M.
One to two syringefuls a day.

3. Potion for Children (Dujardin-Beaumetz).

℞ Bromide of potassium, 2 grammes;
Water,
Syrup of chloral, of each, 60 grammes. M.

A dessertspoonful in a cup of milk, to which the yolk of an egg may be added.

DANGERS AND DISADVANTAGES OF ADMINISTERING CHLOROFORM IN THE PRESENCE OF A NAKED FLAME.

In the *Birmingham Medical Review* for August, 1892, Charles Martin states that about five years ago, while acting, in his early student days, as an anæsthetist to a small provincial hospital, he was led to make some observations on the decomposition of chloroform in the presence of a naked flame. What first drew his attention to the subject was that on certain occasions all those present in the operating-room became affected with an extremely irritating cough, and that the administration of chloroform seemed on those occasions to be fraught with more than usual danger to the patient. He noticed that the unpleasant symptoms did not arise unless the administration of chloroform has lasted half an hour or more, or unless several operations had been performed in the same room in succession. All those present in the room displayed the following symptoms,—viz., a dry, irritating, spasmodic cough, gradually becoming severe; smarting of the eyes; a pungent odor, somewhat resembling that of chloride of lime, and accompanied by a stinging sensation in the nostrils; and a sense of oppression in the chest amounting to actual distress. The patient's condition at these times not infrequently caused great anxiety, and in many cases it was with difficulty that death was averted. All were not affected alike, for in some the respiration and heart failed gradually and synchronously, indicating a simultaneous weakening of both the cardiac and the respiratory mechanisms; while in others the respiration became embarrassed, stridulous dyspnœa became marked, but the heart's action remained unaffected at first, though later on cyanosis supervened and the pulse became weakened.

In the first group of cases the patient was saved by artificial respiration and the administration of ammonia vapor and nitrite of amyl; in the second group of cases, by the same treatment, with, in addition, the forced extension of the neck over the end of the table to facilitate the free passage of air. It was particularly noticed how efficacious the ammonia vapor was as a means of resuscitation. Sometimes, in the early administration of the anæsthetic, an irritating spasmodic cough was produced in the patient also; but this, in my experience, only took place when there had been one or two previous operations in the same room that day, and when, therefore, there was a considerable quantity of the acrid vapor in the atmosphere of the room before that administration was commenced.

On several occasions the window was opened to admit pure air, and, as the air from without mixed with the vapor-laden atmosphere of the room, a distinct haze or mist was produced.

These events demanded some explanation, and, in attempting to arrive at one, various causes were from time to time assigned. At

one time it was thought that the carbolic acid used in the steam spray was impure. This was disproved by the occurrence of all the symptoms in cases where the spray was not used at all. It was then suggested that the chloroform was impure, and had partially decomposed, previous to use, into various chlorine compounds. But on washing it no such compounds were dissolved out, and the washed, pure chloroform when again used produced the same effect.

It was then in the spring of the year, and it was noticed that the symptoms never occurred unless the day was sufficiently cold to demand the use of a large gas-stove, which had recently been erected in the room. Therefore it was thought they might be due to escape of the fumes of partially burnt gas from the stove. This explanation was shown to be insufficient by sitting in the room for several hours, at a time when chloroform was not being administered, and, although the stove was lit, no coughing was produced. Still, however, the stove was suspected to be a factor in its causation, and therefore measures were taken to heat the room by means of hot-water pipes. The stove was discontinued, and for months we were free from trouble.

An operation, however, had to be performed in an urgent case late one night, and we were at once attacked by our old enemy. The stove could not be to blame, for it was not lit, but the room was brilliantly lighted by a large fan of gas jets just above the operating-table. This led the author to suspect that the chloroform underwent some decomposition produced by its contact in the one case with the flame of the gas-stove; in the other, with that of the numerous gas-jets; and this was the correct explanation.

On going out into the fresh air all experienced a pungent, limy taste in the mouth, and the acrid odor became intensified. This aftertaste and odor remained for many hours. The after-effects observed in the patient were mainly those of bronchial irritation, sometimes amounting to bronchitis, and more rarely to bronchopneumonia.

The chemical change which the writer believes takes place is that two molecules of chloroform combine in the presence of the flame with one molecule of carbonic anhydride and one of oxygen, and produce three molecules of carbonyl chloride and one of water.

$$2CHCl_3 + CO_2 + O_2 = 3COCl_2H_2O.$$

But carbonyl chloride is an unstable body, and a second reaction takes place, by means of which one of the molecules of carbonyl chloride is decomposed by one of water, and produces as a result two molecules of hydrochloric acid and one of carbonic anhydride.

$$COCl_2H_2O = 2HCl + CO_2.$$

So that the two original molecules of chloroform yield two molecules of carbonyl chloride and two molecules of hydrochloric acid. The remaining molecules of carbonyl chloride, he believes, break up into hydrochloric acid and carbonic anhydride by uniting with the watery vapor in the atmosphere. So that the final result is that, for every two molecules of chloroform that are decomposed, six molecules of hydrochloric acid may be formed.

$$2CHCl_3 + CO_2 + O_2 + 2H_2O = 6HCl + 3CO_2.$$

In the presence of this hydrochloric acid gas, becoming more and more concentrated on the mucous membranes by being absorbed by the moisture covering them, that produces the irritating cough, the acrid odor, and the other unpleasant symptoms described. Herein, perhaps, lies an explanation of the fact that ammonia vapor is of such value as a restorative.

In the much-discussed question of chloroform *versus* ether, one argument much used in favor of chloroform was that it was safer to administer in the presence of a naked flame, because ether vapor was so highly inflammable and chloroform vapor was not, and it has been urged that chloroform but rarely tends to cause bronchitis. But in the presence of a naked flame, chloroform has special dangers at the time, as now shown, and the after-effect bronchitis no rarity.

These difficulties have only once, so far as I know, been referred to in this country, and that was by Dr. Paterson, of Cardiff, in a paper on this subject, published in the *Practitioner* for June, 1889.

Abroad, Professor Zweifel records cases of somewhat similar difficulty arising in rooms illuminated by oil-lamps, showing that it is no peculiarity of a gas-flame, but that the only essentials are the presence of chloroform vapor in the atmosphere which feeds a naked flame.

The conclusion that the writer draws from these observations is that an ideal operating-room should be one heated by hot-water pipes or an open grate, and lighted by means of the electric light, or some other mode not involving the presence of a naked flame, or if a naked gas-flame must be used, the room should be as large as possible, and the ventilation free, in order to dilute the products of decomposition.

The following are notes of some simple experiments confirmatory of the above statements:

1. Blow chloroform vapor through the flame of a spirit-lamp,—(*a*) a pungent odor; (*b*) a white cloud around the neck of an unstoppered bottle of liquor ammoniæ exposed in the neighborhood of the spirit-lamp. This cloud is chloride of ammonium.

$$NH_3HCl = NH_4Cl.$$

2. Blow chloroform vapor through the flame of a spirit-lamp against moist blue litmus-paper,—the litmus-paper turns red, showing the presence of an acid.

3. Blow chloroform vapor through the flame of a spirit-lamp against moist starch-iodide paper,—a negative result, no blue reaction, and therefore no free chlorine.

4. Finally, blow chloroform vapor through the flame of a spirit-lamp against a plug of cotton-wool moistened with distilled water,—pungent fumes arising from the cotton-wool, and the water expressed from the wool gives powerful acid reaction, and a white precipitate when added to a solution of nitrate of silver. This gives all the reactions of chloride of silver.

In addition, however, in order to show that the conditions in these experiments fairly represent what takes place in the gas-flame, let any one who has administered chloroform in the presence of a naked flame, hold a piece of moist blue litmus-paper for a few seconds over the flame immediately after the operation, and it will be found to turn red. This will not occur except when chloroform vapor has been set free in the room.

These few experiments are sufficient to show that chloroform in the presence of a naked flame decomposes with the formation of a large quantity of free hydrochloric acid.

TREATMENT OF MALARIA BY METHYLENE BLUE.

HUDDLESTON reports in the *Medical Record* for August 13, 1892, the results obtained by him in the treatment of three sisters, aged ten, seven, and five years, who were suffering from tertian malarial fever. The chill was severe enough to cause general shaking and chattering of the teeth, and occurred usually at 9 A.M., being followed by a fever and a sweat.

The children were Russian Poles. The characteristic hæmatozoön was found in the blood of the older child, but not in that of the others.

Methylene blue was administered in the dose of 1½ grains in capsule every three hours to the oldest child. To the one aged seven, every four hours; to the one aged five, every five hours. This treatment was continued regularly for four days, except that the medicine was not given at night when the children were asleep. The temperature was taken at noon daily, and continued normal, excepting on the second day, when the second child had a temperature of 100° F., with no other symptom. The urine, colored blue, was passed without any difficulty, and in sufficient amount in every case. Examination of the sediment gave a negative result. All medicine was stopped after the fourth day; the blood was again examined and nothing abnormal noted. Since then there has been no relapse.

EUROPHEN AND EUROPHEN-ARISTOL.

In the *Medical Bulletin* for September, 1892, DR. J. V. SHOEMAKER contributes an article upon this subject.

In the case of a middle-aged woman, who came to him suffering from a typical example of the second stage of rosacea, and in whose skin the injected capillaries could be seen as bright red lines, he ordered the following lotion:

℞ Europhen, ʒii;
Glycerin, ʒi;
Spiritus odoratis, fʒii.

He has also found very considerable amelioration attendant upon the use of an ointment of europhen of the strength of 10 to 20 grains to the ounce in cases of erysipelas. In acute vesicular eczema, europhen powder, combined with subnitrate of bismuth, has reached the inflammation, absorbed the serous exudation, allayed the heat and itching. A case of chronic eczema, affecting the hands and feet, was cured by the persistent use of an ointment consisting of one drachm, finally increased to two drachms, of europhen to an ounce of lanolin.

In similar cases the powder composed of europhen-aristol proved of service. Probably this powder for the majority of cases is more suitable than the europhen alone.

THE USE OF SALINE CATHARTICS FOR DIAGNOSTICATING INTESTINAL OBSTRUCTION.

While many rules are laid down in textbooks as to the diagnosis of this serious condition, practical experience shows that it is a condition not readily diagnosticated.

In an article in the *Journal of the American Medical Association* for August 13, 1892, DR. HENRY H. MUDD, of St. Louis, summarizes the matter as follows:

1. There is legitimate reason for the most skilled diagnostician to be in doubt in some cases of intestinal obstruction.

2. The differential diagnosis rests ordinarily between colic, peritonitis, and obstruction.

3. Laparotomy is accepted as the most reliable therapeutic measure for the relief of intestinal obstruction.

4. Laparotomy, to be a good therapeutic agent, must be performed early in the existence of the obstruction.

Pain and vomiting occur in obstruction; yet these conditions are present in constipation, in intestinal colic, and in many diverse conditions.

What are the effects of a saline cathartic on the three conditions above mentioned,—viz., colic, peritonitis, and intestinal obstruction?

Colic.—It will purge a case of colic, and a sedative then cures it.

Peritonitis.—It may arrest a peritonitis.

Obstruction.—It will develop and make plain the more serious condition of a mechanical obstruction. If given early in the case, the distress and aggravation of the symptoms, which it arouses, will subside under the use of morphine, and the general condition will then permit operative relief.

It is only where the doubt is sufficiently strong to control action that the saline purgative is used. It should be promptly given. The time for its efficient administration is in the lull or quiet induced by the first dose of morphine. It may again arouse ineffective and painful peristalsis, but it will in many cases resolve doubt, and determine surgical interference when it is still possible to save the patient.

If the diagnosis of obstruction is clear, there is no excuse for a purgative. No one would attempt to relieve an intussusception, a hernia, a volvulus, or a stricture by a purgative. They aggravate and make more urgent every symptom which attends the condition. Yet this is a good reason to administer a saline cathartic in the beginning of many doubtful cases as a diagnostic measure.

A purgative in intestinal obstruction is an unmitigated evil in its effects upon the strangulated loop and the patient. It should not be given unless it is for the benefit of the surgeon and to purge our minds of doubt. But it seems to me that the great uniformity with which cases recover from the primary depression and collapse which so frequently announces the onset of intestinal obstruction, indicates to us the possibility of using a purgative as a diagnostic agent rather than an exploratory laparotomy in the earliest hours of the disease. If the peristalsis which inevitably sooner or later declares itself, and convinces the most sceptical patient and the most obtuse physician that the obstruction is pronounced and absolute, is promptly aroused by a saline cathartic given before the destructive changes have occurred, and before the vitality of the patient has been exhausted, the action thus aroused will again subside under the use of opium (morphine), and the depression which is occasioned by its use will disappear, leaving an open field for the surgeon.

Laparotomy has rapidly grown in favor as the most reliable therapeutic measure for the relief of intestinal obstruction, if resorted to early in its existence. Surgeons sometimes conceal their ignorance by "explorative laparotomy." Exploratory laparotomy, where symptoms of intestinal obstruction are present, may lead to the prompt recognition of the condition and its cure; but it is a dangerous proceeding where meteorism is present, circulation feeble, and inflammation already existent. These conditions may exist without mechanical obstruction and without the existence of a condition amenable to operative measures. I believe we can avoid some of these useless operations and save many patients by promptly resorting to the less dangerous saline cathartic. It will be admitted when laparotomy would not be considered. It will eliminate doubt, and enable the physician and surgeon to intelligently urge a prompt resort to the efficient treatment necessary to relieve an obstruction,—viz., laparotomy.

If it has been determined to perform laparotomy, the cathartic is, of course, not to be considered. If, however, there is a case anxiously and carefully considered for twenty-four hours (an arbitrary but not a standard time), and grave doubt is still present concerning the condition, an efficient saline cathartic (Epsom salts), followed by an enema, may solve the doubt. It should be remembered that the saline cathartics are dependent upon a fair amount of fluids in the body for their efficient action, and if they are given after a patient has been for a number of days without imbibing fluids, they will not act. The paralysis which attends intestinal inflammation will also interfere with their action.

Will you, in a doubtful case, if presented within forty-eight hours of the onset of the trouble, wait, and let time resolve the doubt and destroy your patient, or make an explora-

tory laparotomy on a patient who does not need it? It appears to him that a purgative is the third and safest method of solving the doubt.

The free, spontaneous action which follows relief from an obstruction, whether by nature's unaided effort or by surgical interference, not infrequently produces such a collapse that death follows. Death may be precipitated by cathartics, if used when obstruction has existed for any length of time; but it cannot be said that they cause it, for the obstruction surely determines conditions which finally excite the peristalsis, collapse, and death, and the longer the peristaltic action is delayed the more dangerous it is.

Intestinal obstruction may exist for days without developing any more positive signs of its presence than we frequently see in obstinate constipation, with its attendant pain, sick stomach, meteorism, and prostration. It is for these doubtful cases that Dr. Mudd urges as a conservative measure the administration of a saline cathartic. The modern physician will admit that there is legitimate reason for doubt in the diagnosis of at least a small percentage of cases of intestinal obstruction in the early stages of their development.

PRACTICAL POINTS IN THE TREATMENT OF SOME COMMON DISEASES OF THE EYE.

W. C. Bane (*New York Medical Journal*, November 12, 1892) discusses a number of the more common diseases of the eye and their treatment. In blepharitis he recommends correction of refractive error, proper food, change of air, touching the ulcers of the lids, if they are present, with tincture of iodine or carbolic acid, preceded by a ten-per-cent. solution of cocaine and followed by an oil. Yellow oxide of mercury is lauded as a local remedy, but the author thinks that an ointment two and a half grains to the ounce is sufficiently strong, and that mutton-tallow, or lanolin, is a better base for this ointment than petrolatum. Aristol is recommended for the same purpose. In phlyctenular conjunctivitis the catarrhal secretion from the mucous membrane requires treatment, and excellent directions for good food and hygiene follow. Calomel in $\frac{1}{10}$-grain doses, three times a day, is recommended, and the usual remedies for scrofulous diathesis. Locally the application of water as warm as can be borne is ordered, and five grains of the chlorate of potassium to the ounce of water is directed to be applied with a dropper or fountain-syringe directly into the ulcers. Pyoktanin is recommended in dacryocystitis, but if there is a tight stricture, Bane advises that it be freely slit with an Agnew knife or its equal. In suitable cases of trachoma Knapp's forceps is preferred.

EXTRACTION OF CATARACT WITHOUT IRIDECTOMY.

O. D. Pomeroy (*New York Medical Journal*, November 12, 1892) records fifty cases of extraction of cataract without iridectomy. He uses bichloride of mercury, 1 to 10,000, for bathing the eye freely before the operation, and uses it with some freedom during the operation. The instruments are immersed in boiling water. Cocaine is used in a four-per-cent. solution, several instillations being made before the operation, sufficient to cause about half-dilatation of the pupil, which, in the opinion of the operator, lessens the risk of wounding the iris during the passage of the knife across the anterior chamber. The spring speculum is rarely employed, the upper lid being raised by the fingers of an assistant or with a lid-elevator. A rather broad Graefe knife is always chosen, and in making the section an imaginary equilateral triangle is laid on the cornea with the base upward. The puncture and counter-puncture correspond to the two upper angles of the triangle. The knife enters about midway in the limbus and emerges at a corresponding point on the opposite side. The section terminates at the margin of the sclera above, as nearly as possible, although in some cases by an effort to avoid the iris the incision may extend too far in the clear cornea. The latter condition favors anterior synechiæ. The capsule is lacerated with the Graefe cystotome near the centre of the lens, care being taken to avoid the upper periphery for fear of lacerating the iris or rupturing the zonula. The lens is delivered by means of a Daviel's or Bowman's spoon, one being placed in the sclera above and the other on the lower portion of the cornea. Difficulty in removing bits of lens-matter after the iris is returned to its proper position is avoided by delivering the broken-up lens-matter while the body of the lens is still in passage—that is, before the iris has returned to its position—by a stroking movement of the spatula on the cornea until the pupil appears black. This may be accomplished at about the time the body of the lens is extruded through the eye. Afterwards the eye is thoroughly irrigated with a bichloride solution, and eserine (one grain to the ounce) is instilled, although Pomeroy does not feel certain of its value in preventing prolapse

of the iris, but feels sure that it does not produce iritis. A sterile binocular bandage is applied. The eye is not disturbed on the following day if, after the removal of the dressing, no untoward symptoms are apparent. Atropine is used after three or four days.

THE TREATMENT OF SYMBLEPHARON BY A NEW OPERATION.

DR. ROGMAM (*Archives d' Ophthalmologie*, October, 1892) describes his method of treating symblepharon as follows: The operation is divided into two portions.

First Portion.—After having cut the adhesions formed by the symblepharon, so as to create an artificial cul-de-sac possessing at least the depth of the natural conjunctival fornix, a quadrangular flap of skin is cut from the cheek the size of the eyelid, having its apex below and its base adhering to the skin of the eyelid on a level with the bottom of the fornix. Then raising the flap of skin, an opening is made in the subjacent wound, removing the tissues on both sides of the cul-de-sac which has been made. The flap is then slipped across this opening, the apex of which is fastened by suturing the length of the internal palpebral brim. The eyelid will then present the appearance of a large arc, adhering only at the nasal and temporal sides, entirely free towards the middle, and covered on its anterior and posterior sides and at its edges with a cutaneous covering. The operation is finished by drawing together laterally the edges of the wound from which the flap of skin has been taken, making, in case of need, especially above, several free incisions.

Second Portion.—Three or four weeks later, when one has reason to believe that the applied flap of skin at the posterior side of the eyelid has formed sufficient adhesions, and is supported in a suitable manner, a second operation is undertaken. The ocular surface of the conjunctival cul-de-sac which was formed at the first operation is freshened anew, and any cicatricial traces which may be formed between the ocular globe and the external wound are destroyed. At the same time the inferior opening communicating with the cul-de-sac is enlarged by lateral incisions in case it is contracted. Making, then, a horizontal incision towards the middle of the anterior side of the palpebral arch, and along its entire length, the skin is dissected above and below towards the inferior edge of the arch, to which it continues to adhere, and the flap thus formed is drawn, by reversing it, into the cul-de-sac. The apex is attached by two stitches of suture to the ocular globe near the corneal brim. If the case is suitable, the edges of the external wound are also joined.

The operation which has thus been described, according to the author, recommends itself (1) by the simplicity and facility of its execution; (2) by the certainty of its results and by the ease with which the mode of operation permits of the formation of a complete artificial cul-de-sac, in which the ocular wound, as well as the palpebral wound, is provided with a tegumentary covering, supported by its free surface and connected in the rear.

THE COMBINED IODIDES IN THE TREATMENT OF SYPHILIS, ESPECIALLY OF THE NARES.

In the July number of the *Revue de Laryngologie, d' Otologie, et de Rhinologie*, DR. G. DARZENS advocates a combination of the iodides of potassium, sodium, and ammonium in cases of urgent specific disease where the prompt effect of the iodide is highly desirable. In a man of thirty-seven, with severe syphilitic lesions of the nasal fossa, who had been vainly treated by large doses of iodide, as well as other antisyphilitic remedies, he gave small doses of each of the three iodides and biniodide of mercury, and obtained a most satisfactorily rapid impression without iodism or other unfavorable symptoms. He explains the result upon the idea that the other salts are eliminated more rapidly and the potassium iodide thus retained in the system until the others have disappeared, claiming that the kidneys excrete a limited proportion of any such salt and tend to retain the urine at approximately the same specific gravity. The intolerable headaches disappeared in a week, and the nasal lesions and dacryocystitis were practically cured in six weeks.

THE TREATMENT OF OBSTINATE SUPPURATIONS OF THE MAXILLARY SINUS.

DR. CARTEZ deals with this subject in the September issue of the *Archives Internationale de Laryngologie*, etc., touching first upon the diagnostic signs, and stating his doubt of any sure means of early recognizing the cases difficult or impossible of cure by mere irrigations. He accords high value to the electric lighting from the mouth (as does Davidson, in the *Berlin. Klin. Woch.*, July, 1892, pp. 665 and 697, who insists especially upon the penetration of the illumination to the eye as the real evidence of freedom of the antrum), and believes it is

pathognomonic if properly employed. He cites the two cases which he has met which had proved rebellious to irrigations, without noting how much experience of the other kind he had had and the proportion which these two represent. In each, former treatment by himself or others had given amelioration only; so he opened the sinus freely from the alveolar border, studied the interior by means of an inserted electric light, and dealt surgically with the morbid conditions within by dividing septal bands, removing and curetting away diseased lining membrane when "pyogenic" in character, all outgrowths. In each case early cure was obtained, which has now persisted a year or more in evidence of its permanence.

AURAL AND NASAL STUDY OF FOUR HUNDRED AND FIFTEEN DEAF-MUTE CHILDREN.

In the *Medical News* of November 19, DR. A. A. BLISS gives some data of his investigation of the ears and upper air-passages of the pupils of the Pennsylvania Deaf and Dumb Institution. Much of interest and importance is given in his report, although much is reserved for detailed publication later; but the point of special importance is his showing as to the conditions of the vocal organs, both in the group of children under training by the exclusively *oral* method, and in the smaller group of *oral failures* who had proved unable to profit by this method of instruction. Reason for the failure was almost invariably found in the organs of phonation, proving that careful choice for such teaching ought always to be made of children with appropriately well-develvoped voice-apparatus, and not of those so defective in this respect that success is impossible. Among those now under oral instruction there were far too many heavily handicapped in their efforts by lesions more or less readily corrigible. The showing as to the frequency of acquired forms of deafness is also interesting, and leads naturally to the thought that not a few of these children might be restored to useful hearing by mobilization of the stapes or other modern operative methods.

HONEY AS A TOPICAL DRESSING FOR PAR-AURICULAR ABSCESS.

In the October *Monatschrift für Ohrenheilkunde*, ZIEM advocates this piece of domestic medication as having served him admirably in this and many other forms of phlegmonous inflammation. The failure of the method in other hands he ascribes to carelessness in its application, and advocates the mixing of a spoonful of the unrefined honey with as much rye-meal, applying the paste, thickly spread, to the inflamed surface, and covering with a thick, impermeable dressing. In five or six hours it should be removed with soap and water and renewed. Resolution or pointing is apt to be prompt; and the abscess, opened spontaneously or by incision, is dressed with the same mixture. He ascribes its action partly to the hydroscopic effect of the sugar, but accords some value to the contained peculiar acid ("amaisensäure").

PERMANGANATE OF POTASSIUM IN THE TREATMENT OF GONORRHŒAL OPHTHALMIA.

ALBERT TERSON (*Archives d' Ophthalmologie*, October, 1892), without wishing to discard standard measures of treatment, has applied this drug to a series of purulent ophthalmias. His researches have been particularly in connection with gonorrhœal ophthalmia of adults, but he has also treated the purulent ophthalmia of a little girl infected from a vulvitis, and purulent ophthalmia in two infants. The effect upon the chemosis and secretion of pus was decided and evident. The irrigations with permanganate of potassium are not painful. They result in transforming the purulent flow into a serous discharge and freeing the palpebral œdema from its characteristic lardaceous constitution. Corneal troubles have never been produced by this remedy, although in some instances they were present before it was employed. He does not wish to assert too much, but, without omitting anything from the complete treatment which is now being adopted, and especially without neglecting any part of the treatment for the first hours when the ophthalmia is still very active, he believes that there is real use in adding permanganate of potassium to the treatment. The drug is entirely inadequate if its solution is applied by the patients themselves, or even by the physician without proper measures.

The irrigations must sweep out the culs-de-sac and the conjunctival surface of the lids, and for this purpose the perforated lid-elevators are important. He employs a solution of 1 to 2000 or 1 to 5000, according to the date and extent of the disease. An irrigation composed of ½ litre or more should be made every eight hours, night and day. The slightly violet coloring which is communicated to the skin of the face and the hands of the operator is removed with a solution composed of bisulphite of sodium, 2

grammes; water, 100 grammes; hydrochloric acid, 4 drops.

In closing he reiterates that he does not wish to reject any of the traditional treatment, but pleads for the addition of permanganate of potassium to the other measures.

THE TREATMENT OF HERPES OF THE CORNEA WITH PYOKTANIN.

GALEZOWSKI (*Recueil d' Ophthalmologie*, September, 1892) refers to the successful effect of pyoktanin upon herpetic ulcers of the cornea, which he has administered in a number of cases, especially in cases where all other means were without result. The case which follows serves as an example.

A woman, aged twenty-eight, came to the clinic on February 23, 1891. She complained of acute ocular pain, which had begun suddenly, and had been preceded by sensations of heat, insomnia and photophobia; chills and fever accompanied these pains, which had their seat in the right eye. An ulceration, oval in form, occupied the centre of the right cornea, and the eye upon this side was greatly injected. The sudden development of the disease, with cephalalgia, sore throat, chills, etc., led to the diagnosis of herpes. Locally atropine drops were prescribed, together with a sublimate lotion, and internally full doses of sulphate of quinine. At the end of several days there was no amelioration of the symptoms. Leeches were then applied to the right temple, but again without result, when recourse was had to a collyrium of pyoktanin instilled into the eye four or five times a day in the following form:

> Pyoktanin, 10 grammes;
> Distilled water, 10 grammes.

The following day there was evident improvement. At the end of the first week the vesicles were found to have diminished and the pericorneal injection to have disappeared, and at the end of about a month there was only a little light opaque spot which did not interfere with vision.

SCLERITIS, IRITIS, AND DIFFUSE KERATITIS.

DR. VAN MOLL (*Klin. Monatsbl. f. Augenheilk.*, October, 1892), discussing the topical treatment of ocular diseases not especially concerned with the superficial tissues of the eye, comes to the following conclusions: Irrigation of the eye with lotions of salicylate of sodium produces good results in episcleritis, but not in kerato-scleritis and diffuse keratitis; consequently it should be reserved for the milder forms of episcleritis. Subconjunctival injections of sublimate are excellent in many of the cases of iritis and irido-cyclitis, and good results follow their use in diffuse keratitis. Mydriatics, however, must not be omitted, and when syphilis, rheumatism, etc., are present, general therapeusis is necessary. Injections of salicylate of sodium, without doubt, secure happy results in scleritis and in the lighter forms of diffuse keratitis. Great care must be taken in sterilizing the injection, and, as in some cases it is difficult of application, it is reserved for those where the ordinary methods of treatment have been inefficacious.

ON THE USE OF COCAINE IN OPERATIONS ON THE EYES.

BARRAQUER (abstract in *Recueil d' Ophthalmologie*, September, 1892, p. 551) employs a five-per-cent. solution of cocaine in the extraction of cataract without iridectomy. When iridectomy is performed he makes a subconjunctival injection of several milligrammes of cocaine in the neighborhood of the incision of the iris, and by this means renders the operation painless.

KERATOCONUS TREATED WITH THE GALVANO-CAUTERY.

KNAPP (*Archives of Ophthalmology*, October, 1892) describes five cases of keratoconus treated with the galvano-cautery. The method is as follows: The eye is cocainized, a fine wire loop, brought to a red heat, is passed over the apex of the cone in an area of several millimetres, and the centre is then perforated. The aqueous spurts forth in a jet, and the patient is obliged to remain in the hospital for some time. There may or may not be considerable inflammation, and anterior synechiæ may form. It is not always wise to make so extensive an application of the loop to the cornea, but sometimes the point of the electrode is applied repeatedly to the centre of the wound until the aqueous just oozes out. The reaction and the subsequent scar are proportionate to the extent of the cauterizations. In experimental inquiry moderate burnings, with or without perforation, heal kindly and leave circumscribed scars.

Extensive and prolonged cauterizations lead to iritis, suppuration, and sloughing of the cornea. Knapp closes his paper with the following remarks: "Galvano-cautery at the present time appears to be in greater favor than any other method, yet, like all other procedures, it has great dangers. If the cauterization is only superficial, or consists in a mere perforation of the

apex, it is insufficient and has to be repeated. If the cauterization is deep, especially with a large perforation, the closure is slow, and the inflammation and its consequences may be more or less severe, including sloughing of the cornea. Anterior and posterior synechiæ are not infrequent, and may require an iridectomy, which also for optical purposes may be desirable in some cases. Cauterization which acts by the contraction of the cicatrix seems to be the safest method."

A CASE OF THIERSCH'S SKIN-GRAFTING OF THE ENTIRE CAVITY OF THE ORBIT.

W. VON NOORDEN (*Berlin. Klin. Wochenschr.*, No. 41, 1892) describes a case in which there was a carcinoma of the temporal region, eyelid, and eyeball. The entire growth, together with the lids, was excised, the eyeball enucleated, and complete evisceration of the contents of the orbit was performed. Later, a transplantation of epidermis—after the manner of Thiersch—over the entire area of the wound was done. The healing was complete, and at the end of a year there had been no return of the growth.

COAL-MINERS' NYSTAGMUS AND ITS TREATMENT.

M. ROMIÉ (*Annales d' Oculistique*, October, 1892) discusses the subject of nystagmus as it is seen among coal-miners, and recommends the following treatment: Three to five milligrammes of the sulphate of strychnine daily, and the instillation, three times a day, of 1 drop of the following collyrium:

> Sulphate of eserine, 3 centigrammes;
> Distilled water, 10 grammes.

One drop is instilled into the eye upon rising in the morning, one upon returning home, and one at bedtime. Sulphate of atropine, which also produces evident improvent, is an inconvenient application, especially in hypermetropic individuals. Those who employ this treatment declare, even when work is not suspended, that they are annoyed less and less with their complaint, and the nystagmometer indicates evident improvement in the oscillations of the eyeballs.

PROMPT CURE OF LONG-STANDING DEAFNESS BY THE COMPRESSED-AIR BATH.

The September number of the *Revue de Laryngologie, d' Otologie*, etc., contains an enthusiastic paper, by HOVENT, of Brussels, narrating and extolling the effect of immersion in the compressed-air cabinet on a girl, of thirteen, long deaf, and vainly treated by numerous distinguished aurists of Belgium, France, and Germany. Her first bath was accidental,—merely as companion of a patient,—but the effect was so good that further treatment was pressed, in spite of the hopeless opposition of the mother. Aural data are apparently ignored, and the results with the watch-test alone given; but the claim is made, with apparent force, that the hearing for conversation, as for the watch, returned to the normal in ten days, and was instantly regained when—on later cold-taking—relapses occurred. The history states that marked gain had followed removal and reduction of the hypertrophic tonsillar tissues of fauces and vault, with persistent catheterization at Bayer's hands; but all had been speedily lost, and no gain had followed later treatment. The reports as to the effect of compressed air upon deafness, which have appeared from time to time ever since the invention of the diving-bell, are cited, and a long theoretical dissertation given as to the counter-indications and the therapeutic effects in general. It is of unfortunate omen that no further cases have apparently been favorably treated in the six months following this brilliant result, and that the author gives no details as to the pressure, etc., except to state that it differs essentially from that employed in other affections. Yet careful and persistent use of the measure may be well worth trial by those having the apparatus at command, undeterred by the known fact that no notable or lasting benefit has followed the *occasional* employment of it by competent observers in the past.

STERILIZATION OF SOLUTIONS OF ATROPINE, ESERINE, AND COCAINE, AND A DESCRIPTION OF A NEW PIPETTE.

DR. E. STROSCHEIN (*Archiv für Ophthalmologie*, vol. xxxviii., Abt. 2) describes his method of sterilizing solutions of the alkaloids commonly used in ophthalmic practice, and also the apparatus with which he accomplishes this. He has had constructed blown glass bottles and suitable droppers. The bottles may be directly exposed to the flame and the contents of them rapidly sterilized. The pipette has two conical surfaces, and may be introduced into the neck of the bottle with the point upward. Before reversing the pipette the rubber hood must be removed. If the collyria are to be boiled, the small tube must be reversed so as to give free vent to the steam, which, passing out by the pointed end of the tube, sterilizes it at the same

time. Experiments have shown the author that the collyria need to be boiled for only two or three minutes to render them perfectly sterile. The point of the tube which is directed upward during the ebullition likewise becomes sterile. The loss of water which is produced by an ebullition of three or four minutes over a Bunsen burner is about one cubic centimetre. If concentration of the solution to be sterilized is to be avoided, fifteen drops of water must be added before the ebullition.

THE TREATMENT OF INTERSTITIAL KERATITIS WITH SUBCONJUNCTIVAL INJECTIONS OF CORROSIVE SUBLIMATE.

DR. FELIX LAGRANGE (*Recueil d' Ophthalmologie*, September, 1892) contributes two observations on interstitial keratitis treated with subconjunctival injections of corrosive sublimate.

The first was a woman, aged twenty, who consulted him in May, 1892, on account of a keratitis of the left eye, which had begun on the 10th of the preceding March. There were indications of inherited syphilis. The ordinary treatment of this affection up to the first days of May had produced little or no results. When Dr. Lagrange saw the patient—on the 10th of May—the opacity of both corneas was complete. Yellow precipitated salve aggravated the symptoms. The previous treatment of atropine, iodide of potassium, etc., was continued, in addition to which subconjunctival injections of corrosive sublimate were given. Eight drops were injected on each side around the cornea, with the usual preparatory cocainization. Four days later the symptoms began to improve. On the 20th of May the injection was repeated. By the 1st of July there was almost complete recovery, and at the end of July the patient could resume her ordinary occupations. Emphasis is laid upon the general treatment, and the query is raised whether the latter, if it had been continued long enough, would not alone have brought about the cure. It is admitted that the subconjunctival injections were perhaps only auxiliary to the specific therapeutics, yet they greatly shortened the duration of the disease, and hence are recommended.

A second case of monolateral interstitial keratitis, treated with subconjunctival injections without improvement, is contributed. This patient also received treatment with mercurial inunctions and iodide of potassium, and on a number of occasions subconjunctival injections of the sublimate solution. The general condition of the patient was only moderate. It was not possible to prove syphilis in her case. The failure is attributed to the bad general nutrition,—a failure which was present alike with general medication and with the subconjunctival injections. Lagrange inquires whether it is not likely that the keratitis must be specific in origin in order to obtain the best results.

REMOVAL OF A CALCULUS WEIGHING FIVE OUNCES.

GAY (*Boston Medical and Surgical Journal*, vol. cxxvii., No. 6) reports the case of a man, aged forty-three, who for several years suffered from renal colic. These symptoms were followed by the development of tumor in the right side. This gave all the physical signs of pyonephrosis.

On incision, the kidney was found to have been converted into a large, thin-walled cyst, containing between one and two pints of a thin, turbid fluid. A stone was taken out and the cyst-walls were stitched to the external wound. Eleven days after the operation the patient was seized with acute pain in the left hypochondrium. This passed off, however, and did not recur. The calculus removed was seven inches in circumference and two and three-fourths inches in diameter; it weighed five ounces. It was composed chiefly of phosphate of lime and a small amount of carbonate of lime and triple phosphates. Five months after the operation the patient was fat and ruddy and was attending to business. The wound was closed with the exception of a small sinus, the size of a probe, giving a discharge so slight that it occasioned no trouble.

Baum's table of cases issued in 1888 contained a total number of fifty; eight were fatal and forty-two recovered more or less completely.

Whitney has collected the cases recorded in English and American literature since 1888; sixty-eight in all were tabulated; fifty-eight recovered and ten died.

The largest number of calculi found in one kidney was one hundred and fifty. In one of Morris's cases, fatal from septicæmia, two hundred calculi were found in the kidney at the autopsy. One of the most striking cases is that of a woman, thirty-seven years of age, who had suffered from hæmaturia for seventeen years and pain in the right side for nine years. She had a tumor in the left side for seven years, which was supposed to be a floating kidney. Her right kidney was removed in July, 1885. It was found to be a mere shell containing calculi weighing twenty-one ounces. After four months of comfortable existence she was seized with

severe pain in the left side, followed by complete suppression of urine. This state of affairs continued for four days and over. The left kidney was then opened, the ureter found plugged with a small stone, which was removed. The wound healed in ten weeks. The woman was in good health and doing her work five years after the operation.

The author states that early diagnosis and early removal of the stone are two most important elements in the successful management of renal calculi.

Repeated attacks of renal colic, with long continuance of purulent or bloody urine without evidence of sufficient disease in the lower urinary tract to account for these symptoms, point strongly to a renal calculus. Yet under similar conditions, as reported by Treves, the kidney has been opened about thirty times, and no foreign body was found.

THE TREATMENT OF ULCERATION OF THE RECTUM.

GIBBS (*New York Medical Journal*, No. 712), having observed a number of ulcers of the rectum running exceedingly chronic courses, occurring without definite cause in otherwise healthy persons in whom there was no constitutional taint, states that, in opposition to the commonly accepted theory, ulcer of the rectum is generally simple in character, is due primarily to local injury, and is chronic on account of the varicose condition of hemorrhoidal veins. He ingeniously compares these ulcers to those which are observed upon the leg. Since such ulcers cannot be treated as are leg ulcers, by strapping and bandaging, he advises the next best thing,—that is, rest in bed in the recumbent position.

The ulcers are usually situated posteriorly, and are one to two inches from the anal verge. The muscular coat is seldom penetrated. Such ulcers, however, occasion an amount of pain and disability by no means commensurate with their size, and, moreover, they are liable to become aggravated beyond the reach of simple surgery.

As a means of stimulating sluggish granulations curetting through a speculum is advised, and when, under the effect of prolonged rest, an ulcer has closed down to a small spot which obstinately remains open, a fistulous tract must be searched for, and if present must be laid open.

Stretching the sphincter is futile, since the paralysis aimed at wears off in a few hours. The only effective way of putting the parts at rest long enough to do any good is the careful use of the knife. The best method is to make an incision longitudinally through the base of the ulcer deep enough to sever the circular muscular layers underlying. This cut, unless very superficial, should be continued through to the anus for the additional purpose of securing drainage, thereby avoiding the unquestioned danger of periproctal cellulitis. As cicatrization gradually takes place, applications of nitrate of silver (gr. x–lx to the ounce) once or twice weekly are advisable.

A cure of a moderately large ulcer in two or three months is as much as can be hoped for. In the deeper forms of ulceration, resection of the whole area of disease, the knife being carried through the thickness of the gut, combined with linear proctotomy, is most applicable. When the ulcer is spread over the whole area of the rectal pouch the injury is irreparable. Pain, sleeplessness, reflex disturbances of the whole digestive tract, wear down the general strength with the rapidity of a cancer.

Local treatment is simply a waste of valuable time which can never be regained. There are two surgical alternatives: first, resection of the rectum, with suture of the divided ends of the intestine; and, second, colotomy. Resection is severe, bloody, often desperate, so much so that its risks may be prohibitive.

Colotomy, on the contrary, is bloodless, safe, and rapidly performed, and is, according to the author, attended with subsequent comfort and satisfaction on the part of the patient.

INTUBATION VERSUS TRACHEOTOMY.

LOVETT (*Medical News*, vol. lxi., No. 9) finds, as a result of the statistical study of 858 cases of diphtheria operated on at the Boston City Hospital, that of 327 cases of tracheotomy, 232 died and 95 recovered, making a percentage of 29.05 per cent. Of 392 cases of intubation, 312 died and 80 recovered, making a recovery percentage of 20.41 per cent. Twenty-one times intubation was attempted, and immediate tracheotomy was necessitated by prompt cessation of breathing. Of these cases, only two recovered. In three cases death occurred during attempts to insert the tube. In two cases the tube was drawn into the bronchus and death of course resulted. In two insertion of the tube was followed by convulsions. In two the introducer broke during the operation. As a result it seems clear that the death-rate of intubation is nine per cent. higher, and that the accidents during intubation are much more common.

Of 42 patients under two years of age on whom tracheotomy was done, only three recovered, while of 123 cases in which intubation was performed on children under two years of age, 14.63 per cent. recovered.

Tracheotomy in these very young children is liable to be a difficult operation, and, although intubation is by no means easy in these small mouths, it is preferable to tracheotomy in children under two years of age. In children between two and three years the question would be debatable. It is often said that intubation can be followed by tracheotomy. The author pleads for the early performance of tracheotomy if it is to be done at all. Of one hundred and twenty-seven cases of secondary tracheotomy, fifty-seven of these being from the Boston City Hospital, but ten recovered.

The author concludes from these figures that intubation is not so favorable as tracheotomy. The chief reason for this appears to be twofold. Intubation does not afford such good drainage to the trachea, and only a limited amount of nourishment can be taken by the intubated patient.

INTRAVENOUS INJECTION OF "NORMAL" SALT SOLUTION FOR THE GRAVE HEMORRHAGES OF MIDWIFERY.

SPENCER (*Lancet*, June 18, 1892) reports eight cases of hemorrhage treated by injection of normal salt solution. Of the eight cases, four recovered and four died. Of those that died two (cases of accidental hemorrhage) are of no value in estimating the effects of the treatment, for in one case the patient was in a hopeless condition and in the other was practically dead; both died when a few ounces had been injected. Of the other two cases, one had an extensive laceration of the lower segment of the uterus and a hæmatoma of the broad ligament, and died rather from shock than loss of blood; the other (a case of central placenta prævia) had also a lacerated cervix, and might possibly have recovered if a second injection had been made. Of the cases that have recovered, two were examples of adherent placenta, with post-partum hemorrhages, and two were cases of accidental hemorrhage; one of these women died in her next labor from a repetition of the accident. In two patients the operation was performed a second time, making six successful operations in all. The eight cases bear but a small proportion to the number of cases treated for hemorrhage. During the last five years the author endeavored to see all cases of acute ante-partum and all grave cases of post-partum hemorrhage occurring in the hospital maternity. Of the former alone (excluding miscarriages) he saw about one hundred cases, including forty cases of placenta prævia. Many patients were almost pulseless and in a serious general condition after the loss of large and small quantities of blood; twice patients recovered without transfusion after hemorrhage so severe as to cause convulsions; all except the eight reported cases recovered with the ordinary remedies, and in no case was intravenous injection resorted to until the ordinary methods of treatment failed.

Before performing the operation the bleeding should be definitely controlled. The apparatus employed for the purpose of injecting the fluid consists of a glass bottle, holding two pints, with an india-rubber stopper, through which pass a thermometer, a thistle-headed tube (for the purpose of replenishing and for the admission of air) filled with antiseptic wool, and a delivery-tube, to which are attached about four feet of india-rubber tubing and a canula made of vulcanite or glass. The apparatus, having been washed with a five-per-cent. solution of carbolic acid and with boiled water, is filled with hot boiled distilled water containing one drachm of sodic chloride to the pint. Instead of using the solid salt, time and trouble may be saved by employing stoppered glass tubes containing two drachms of pure salt in solution. When the bottle is filled, the solution is maintained at a temperature of 105° F. by placing the bottle in a vessel into which hot or cold water is poured from time to time. The solution is made to run by blowing with the mouth through the wool-stoppered tube and raising the bottle about two feet above the patient's arm. A longitudinal slit is then made in the skin over the median cephalic or basilic vein. If assistance is not at hand, it is better to make a transverse slit through a fold of skin, as the elasticity of the skin then makes the wound gape. The vein is isolated, and three fine silk ligatures are passed under it. The lower of these is tied, the vein is picked up with forceps and opened with a scalpel, and, the solution having been set running, the canula is inserted and tied in with the middle ligature. The solution should be allowed to flow slowly, and the bottle should not be raised too high. Thirty or forty ounces will in nearly all cases be sufficient to inject, and the operation should take from twenty minutes to half an hour. In case of relapse the operation may be repeated on the other side. After the operation the canula is removed, the vein tied with the upper ligature, and the wound closed and a back splint applied. If necessary, stimulants may now be admin-

istered with greater benefit than before the operation.

In conclusion, the author expresses his belief that the operation properly performed is neither attended by danger nor followed by evil consequences; that it will afford remarkable relief in cases of severe hemorrhage, which are not complicated by "shock," after all the ordinary methods of treatment have failed; and that in the gravest cases of ante-partum hemorrhage it would be well to inject the solution before delivery is effected.

THE STERILIZATION OF IODOFORM EMULSION.

GARRÉ (*Centralblatt für Chirurgie*, No. 39, 1892) states that among many hundred cases injected with emulsion of iodoform oil, violent inflammatory reaction, great pain, iodide eruptions, etc., such as have been observed by Dr. Stubenrauch, have never been encountered. The only symptoms excited were occasionally elevation of temperature. The olive oil is sterilized by means of boiling. The iodoform is added after cooling the oil, ten per cent. by weight. The vessel in which the oil is received is previously sterilized by washing with sublimate solution, the bichloride being washed out with ether. The best preparation of iodoform to employ is the fine powder prepared by means of electrolytic action, according to the method of Schering.

Garré is inclined to attribute inflammatory reaction either to lack of sterilization of the preparation or to breaking up of the iodoform in the course of the procedures adopted for sterilization. He states that the use of this emulsion in surgical tuberculosis is so simple and its results so satisfactory that it should be employed not only in every well-directed hospital but also by the general practitioner, hence the simplest method of sterilization is the one most to be commended.

THE CONSERVATIVE TREATMENT OF JOINT-TUBERCULOSIS BY A NEW METHOD.

BIER (*Beilage zum Centralblatt für Chirurgie*, No. 32, 1891) treated twenty cases of tuberculosis of the extremities on the principle that a passive hyperæmia would not only prevent extension of the disease process, but limit or destroy the virulence of the tubercle bacilli. He was led to a trial of this method from the fact that passive hyperæmia of the lungs conveys immunity against pulmonary tuberculosis. Venous congestion was produced in accordance with the method commended by Helferich in the treatment of delayed union of fractures. The extremity was bandaged up to the seat of disease, and above the latter an elastic band encircled the limb. The injurious effects upon the skin, which follow from long-continued pressure of the band, were prevented by placing cotton beneath the elastic ligature and by changing the position of the latter from time to time.

The author states that, as a rule, improvement was surprisingly rapid. In no instances were cases made worse.

THE MODERN TREATMENT OF TUBERCULOSIS OF JOINTS.

KÖNIG (*Bericht über die Verhandlungen der Deutschen Gesellschaft für Chirurgie*, No. 32, 1892), in a general review of this subject, states that in only one-fifth of all the cases of joint tuberculosis is the local trouble the sole manifestation of disease, so that tubercular arthritis may generally be regarded as a manifestation of metastasis. In so far as the treatment of the local trouble is concerned, this consists in the direct and radical removal of tubercular foci, most thoroughly accomplished by amputation, generally accomplished, though not so certainly, by extirpation of the diseased joint, or by removal of disease foci in the bone, supplemented by vigorous curetting of the soft parts; or in combating of symptoms through intra-articular injections of iodoform; or other treatment, such as rest, extension, etc.

By means of pressure and rest almost one-half the cases are cured. The proper recognition of the value of this treatment has only been reached as the result of reaction from excessive zeal, which leads to the performance of operations so early that in many cases even a positive diagnosis could not be made.

The coxitis of children is a disease to be handled in this conservative way. The treatment is continued until the joint is painless and is functionally perfect. This often requires from six months to a year. Results are, as a rule, much better than those following resection. When the bone is involved in the process this treatment is often unavailing, and here injections of iodoform-glycerin are found to be most serviceable. The favorable results in many cases are temporary. It is safe to say that about thirty per cent. of cases are cured by injection treatment. It must be borne in mind, however, that the iodoform influences only those tissues with which it is brought in direct con-

tact. If, after four or five injections, no distinct improvement is manifested, the treatment should not be continued. Of four hundred and ten cases of tubercular disease of the hip-joint observed in the last fifteen years, about one-half were treated conservatively. Two hundred and fifty were resected with about nineteen per cent. mortality. Resection was practised in cases which resisted conservative treatment, in cases showing marked tendency to abscess formation and caseation, and in cases where the bone was extensively involved. In a few cases amputation was practised. Where the disease is widespread, suppuration is profuse, and the liver and kidneys are diseased; it is, without doubt, the safest operation.

In ordinary cases resection with extirpation of the capsule was practised. Of 100 resections of the knee-joint practised upon patients between twenty and sixty years, 6 died shortly after operation, 6 within a few weeks, 64 were cured, 16 were not cured, and 8 were subsequently subjected to amputation with good results. In 1888 information was obtained in regard to 70 of the patients operated on since 1876; 44 were still healthy and were able to work; 20 had died, probably of tuberculosis; 6 still suffered from fistulæ.

König believes that extirpation of the capsule alone, without removal of the joint extremities, is an unsafe measure.

Bergmann, in discussing König's paper, formally commended iodoform-glycerin injections. This procedure should give place to operation only in fulminant cases. Of 36 cases treated by injection during 1891, 31 were cured, and only 5 were subjected to operation. Von Bergmann expresses himself as thoroughly in accord with König in condemning early resections.

Küster also expressed himself as well satisfied with iodoform injections. In the last year he performed only three resections. Even if injections are not followed by improvement, it is safe to wait, in patients under fifteen years of age. In older patients, failure of the injection method implies resection or amputation.

Koch (Dorpat) treated, in ten months of the years 1890 and 1891, 367 cases of joint tuberculosis; 100 of these involved the hip-joint; 117 the knee-joint. He warmly commended the iodoform injections.

RAPID HEALING OF WOUNDS OF THE CRANIAL VAULT.

SINGER (*Centralblatt für Chirurgie*, No. 32, 1892) describes a method of curing in a short time wounds of the cranial bones, accompanied by stripping off of the periosteum. After the wound has been treated antiseptically for several days by moist sublimate or carbolized dressings, the external table, or a portion of it, is chipped away by means of a chisel. A moist bandage is then applied. In two or three days healthy granulations appear, and in a very short time the whole wound is converted into a surface of granulation, which promptly cicatrizes. Even in suppurating wounds this method may be carried out. Of course in phlegmonous and progressive inflammatory processes such procedure is not to be recommended, the bones being treated upon general surgical principles. By this treatment wounds of the skull, which would require weeks, or even months, to heal, are completely cicatrized within a few days.

THE VALUE OF ANASTOMOSIS BY MEANS OF SENN'S APPROXIMATION PLATES.

BARACZ (*Archiv f. Klin. Chir.*, 44 Bd., 3 Heft, 1892), after a careful clinical and experimental study on the subject of intestinal anastomosis, in accordance with Senn's method, arrives at the following conclusions:

Gastro-enterostomy should always be performed according to Senn's method. The superiority of this over the old method of Czerny-Lembert suture is shown by the clinical and experimental mortality,—24.5 per cent. for plate anastomosis, as opposed to forty-two per cent. and forty-seven per cent. when the operation is performed by suture.

The anastomosis method is simple, rapid, and abundantly provides against leakage. Intestinal anastomosis should always be performed by means of Senn's bone-plates. This operation is also commended for the rapidity with which it is performed and the security it offers against leakage.

The treatment of strictures of the bowel is best conducted by means of Senn's bone-plates. In cæcal neoplasms inoperable on account of the involvement of surrounding tissues, ileocolostomy by means of decalcified bone-plates is the best operation.

In cæcal tumors, where section of the bowel is possible, Senn's operation—that is, resection of the ileum and the cæcum, invagination of each resected end upon itself and suture converting it into a blind pouch, and restoration of the gastro-intestinal tract by means of ileocolostomy—is more rational than any other methods which have been suggested.

In cases of marked inequality in the size of intestinal lumen, circular enterorrhaphy should

not be attempted, but anastomosis by Senn's plates should be accomplished. Since in resection of the gangrenous loop of a strangulated hernia the bowel lumen often vary a great deal in size, this method is particularly applicable to these cases; in fact, the author warmly recommended all of the conclusions with which Senn concludes his scholarly paper.

CÆSAREAN SECTION IN PLACENTA PRÆVIA.

FORD (*American Gynæcological Journal*, vol. ii., No. 9), after a discussion as to the treatment of placenta prævia, reaches the following conclusions:

1. The dangers of placenta prævia, as well to the mother as to the child, are due to the development of the placenta upon the lower uterine segment, and to the canalization of this segment during labor.

2. While the first of these conditions cannot be avoided, the second should not be permitted in placenta prævia totalis or partialis. Delivery should be by Cæsarean section.

3. In placenta prævia marginalis, if the circumstances were favorable, the os easily dilatable, the condition of the mother and child good, the head presenting or capable of being steadily brought to engage, and the hemorrhage arrested or moderate, it would be well to follow the method of intrauterine and vaginal tamponnade, and deliver by forceps if the child should be in danger. But, if the os were rigid, the hemorrhage profuse, the presentation lateral, the cord prolapsed and not reducible, or the fœtus evidently suffering, immediate recourse to Cæsarean section should be had.

4. The Cæsarean section should be performed as soon as the diagnosis is established and the condition of the mother permits, to the exclusion of all other methods, as an elective and primary operation, in all cases of placenta prævia totalis and partialis, and as soon as the conditions warranting it, in placenta prævia marginalis, have been satisfactorily determined.

5. In the two graver forms of placenta prævia, the Cæsarean section should be practised as a prophylactic measure, in place of any attempt to deliver by the natural passages, after the first hemorrhage.

6. In cases where hemorrhage is late or sets in only as labor begins, and where, consequently, the placenta is most probably attached laterally, it is advisable, until this entire subject has been practically studied, to deliver per vaginam, as a rule. If therefore the cervix be easily dilatable, and the hemorrhage moderate, we may proceed as suggested in the more hopeful cases of marginal implantation. But even here an undilated os associated with severe hemorrhages would constitute a very serious condition. If the rigidity were due to fibrosis, it should be abated by multiple incisions; if to carcinoma, the radical Cæsarean section would be indicated. If the cord were prolapsed, and after reposition still descended, the os being partly dilated and not dilatable, dangerous hemorrhage continuing meanwhile, the Cæsarean section would be unquestionably indicated for the safety of both mother and child.

CASE OF SUPPOSED HEART-FAILURE DURING THE ADMINISTRATION OF CHLOROFORM.

PRINCE (*Medical Record*, vol. xlii., No. 12) reports a case of supposed heart-failure during the administration of chloroform.

The anæsthesia was rendered complete and the operation was begun before dangerous symptoms were noted. Circulation and respiration were suspended, and the patient became livid. He was suspended by the flexed knees over the operator's shoulders, and was subjected to a trotting motion around the operating-room. With the body still inverted, the Sylvester method of artificial respiration was next practised. This was followed by no change in the symptoms. The patient was to all appearances dead. The skin was blue; auscultation revealed no sign of pulsation. Hemorrhage had ceased, the last blood being of a very dark color. The patient was again lifted to the shoulders, and trotted around the room for about one minute. The operator then took a deep inspiration, joined his mouth with that of the patient, and emptied the contents of his lungs into the patient's lungs.

The chest expanded, and the diaphragm, with the weight of the intestines, was raised, and probably the flaccid heart was emptied of its blood.

Immediately the weight of the intestines and the elasticity of the chest forced a complete expiration. This was followed by another insufflation, and the treatment was continued until the lips became less livid, although the ashen hue of the countenance persisted. The artificial expansion of the lungs was continued for about five minutes.

After a little time the patient was placed upon the table, and the operation was concluded under ether.

The reporter states that this is the sixth case

of suspended animation which did not respond to either the Marshall-Hall method or the Sylvester method. All of these recovered after suspension, excepting the last, in which insufflation probably saved life.

CAN A SEPTIC BULLET INFECT A GUNSHOT WOUND?

LAGARDE (*New York Medical Journal*, vol. lvi., No. 17) has conducted a careful research upon the question as to whether or not bullets are necessarily sterile. As a result of culture experiments and wounds inflicted upon animals, he arrives at the following conclusions:

1. The vast majority of cartridges in original packages are sterile and free from septic germs.

2. The sterile condition of the cartridges is due to the thorough disinfection and absolute cleanliness observed in the process of manufacture.

3. The majority of gunshot wounds are aseptic because the vast majority of the projectiles inflicting them are either sterile or free from septic germs.

4. Cartridges out of original packages show micro-organisms upon them, and these are not entirely, if at all, destroyed by the act of firing.

5. Anthrax, when applied to the projectile of a portable weapon, is seldom, if ever, entirely destroyed by the act of firing.

6. When a gunshot wound is inflicted upon a susceptible animal by a projectile infected with anthrax, the animal becomes infected with anthrax and dies in the vast majority of instances from said infection.

7. The heat developed by the act of firing is not sufficient to destroy all the organic matter on a projectile, the cherished notion of three centuries and more to the contrary notwithstanding.

8. The results justify the assumption that a septic bullet can infect a gunshot wound.

Reviews.

MATERIA MEDICA, PHARMACY, PHARMACOLOGY, AND THERAPEUTICS. By W. Hale White, M.D., F.R.C.P. Edited by Reynolds W. Wilcox, M.A., M.D., LL.D. Philadelphia: P. Blakiston, Son & Co., 1892.

When it was announced that that very accurate student of disease, Dr. W. Hale White, was about to publish his earlier work, with the title of "A Text-Book of General Therapeutics," those of the profession who were cognizant of his thoroughness as an original investigator, and of the completeness of the monographs which he had contributed to medical literature, expected that a work would appear which would practically be encyclopædic in its character. Similarly, when it was announced that a work with the very imposing title given to the one now under review would shortly appear, notwithstanding the disappointment of the first occasion, it was imagined that a tome at least the size of Dr. Brunton's celebrated work would be presented to the profession, and this was emphasized by the fact that it had been considered wise by the American publishers that Dr. Wilcox should edit the work for American readers. Neither of these works are larger than most of the smaller manuals, but it cannot be denied that they present quality if not quantity. Practical experience with Dr. White's book on general therapeutics, both as to its usefulness to the student and as to the soundness of the advice which he gives, has proved that he is an author upon whom much dependence may be placed, and a careful examination of the American version of his second work, which has been published under Dr. Wilcox's eye, show that it also is worthy of both its author and its editor. As with most books, it has been found impossible to prevent a few errors from creeping in. These, however, have many of them been eliminated by the American editor, so that in this respect the American edition is an improvement over that of the English, and, as it has been brought into harmony with the U. S. Pharmacopœia, there is nothing to prevent it from becoming a popular text-book, if such a popularity is deserved. In order to save space, information concerning much of the materia medica is placed in fine type. A useful addition is the placing of the chemical symbol after the synonyme of each drug. That the most recent remedies have been considered will be understood when it is stated that hydrochlorate of orexin has found a place in the book, as has also oxychinaseptol. The first of these remedies has practically proved itself useless, and the second has been before us so short a time as to be hardly worthy of consideration in a text-book. The alphabetical order is not followed, but the drugs are divided into those belonging to the inorganic and organic materia medica in as simple a way as is possible in the present condition of our knowledge. The arrangement of the book is such that, when information is desired of any particular portion of it, it can readily be obtained, although the indexing is not as complete as could be desired. There is no therapeutic index, but in its place a table

of the natural orders of the vegetable drugs and a list of Latin phrases commonly used in the writing of prescriptions.

TREATISE ON DISEASES OF THE NOSE AND THROAT. By Francke Huntington Bosworth, A.M., M.D. Vol. II. Illustrated with plates and wood-cuts.
New York: William Wood & Co., 1892.

As the author well states in his preface, it is a matter of regret that the second volume of so important a work should by reason of professional duties be delayed for as long a period as two and a half years after the first volume appeared. This disadvantage is, however, more than compensated by the thoroughness with which Dr. Bosworth has presented his subject in the concluding volume, which, if possible, is superior to the first, and he is to be congratulated upon presenting to the American medical profession so complete and able a summary of our present knowledge concerning diseases of the nose and throat.

The mere statement that this second volume contains nearly eight hundred and fifty printed pages emphasizes the fact that the work is an exhaustive one, and in its thoroughness and scope is quite equal, and necessarily more modern than the celebrated work of Cohen, which has now been several years out of print. It is particularly interesting to the general practitioner to notice that the article upon diphtheria is as exhaustive as the importance of this subject requires, and the author has seen fit to engage to a certain extent in a brief historical sketch of the disease, which is valuable because at the present time the whole question of the relation of diphtheria to so-called membranous croup is so open to discussion. We are disappointed that in his definition of diphtheria he does not bring out with sufficient clearness the fact that it is essentially a local disease in its earlier stages, for he states that it is "an acute infectious disease, which results directly or indirectly from the entrance of a specific germ into the system, giving rise to a somewhat virulent form of blood-poisoning." It would have been better had the statement been made that the system became poisoned by the products of a specific germ, for, as we have pointed out before, the germ itself does not gain access to the general system. He even refers to the faucial inflammation as a characteristic eruption which accompanies the disease in much the same way that the eruption accompanies any one of the acute infectious fevers. We doubt whether this position is tenable in view of the researches recently made in this country and abroad. The illustrations are sufficiently plentiful to thoroughly illustrate the text, and while many of them are not particularly original or unusually well executed, they are, on the average, very fair. Some of them have evidently been made from very rough sketches, as, for example, the cut illustrating the palatal form of quinsy, on page 108; and that of acute uvulitis on page 90.

ANÆSTHETICS: THEIR USES AND ADMINISTRATION. By Dudley Wilmot Buxton, M.D., B.S. Second edition.
Philadelphia: P. Blakiston, Son & Co., 1892.

This small book of two hundred and twenty-two pages deals in a thorough manner with the subject of anæsthetics, and is copiously illustrated with cuts, showing the various forms of inhalers used in the administration of the ordinary anæsthetics.

Dr. Buxton has already written so largely upon this subject that most of his views are familiar to our readers. This brochure will add to his reputation as a skilful anæsthetist, and will prove interesting reading to any one who is wise enough to wish to pay careful attention to this important subject.

A MANUAL OF MEDICAL JURISPRUDENCE. By Alfred Swayne Taylor. Revised and edited by Thomas Stevenson, M.D. Eleventh American edition, with citations and additions from the twelfth English edition, by Charles Bell, Esq.
Philadelphia: Lea Brothers & Co., 1892.

"Taylor's Medical Jurisprudence," which has been as popular in America as in England, has been brought forward to the most modern stand-point by the careful work of Dr. Stevenson, whose work has in turn been still further modernized and Americanized by Mr. Clark Bell, who is so well known for his interest in medico-legal matters.

All of the chapters provide such complete information as to legal decisions, or to reported cases, that the physician will rarely have to consult other works in determining the course which is the proper one for him to follow in the event of his being connected with a medico-legal case.

The work is peculiarly valuable in its constant reference to typical cases in medical journals, and to the reports of trials or records of legal testimony. So far "Taylor's Medical Jurisprudence" has been the first and foremost medico-legal authority that we have had, and the work of its recent editors has placed it on a plane which we believe other books will find difficult to reach.

FISSURE OF THE ANUS AND FISTULA IN ANO. By Lewis H. Adler, Jr., M.D.
Detroit, Mich.: George S. Davis, 1892.

It is safe to say that even the experienced surgeon may spend the thirty minutes neces-

sary to read this little work, of some seventy-odd pages, with profit to himself. It is, indeed, worthy of high praise. It purports to deal with the cardinal points in connection with fissure and fistula in ano,—maladies of the greatest importance, not only because they are so frequently encountered, but, unfortunately, because they are often ill treated. The author has done his work admirably. He has confined himself to cardinal points, and his treatment of the subject is clear, concise, and direct, his teaching sound and modern. He does not confuse the reader with disputed points of etiology and pathology, but gives a forcible clinical picture of the diseases under discussion. The work is essentially practical, and is one which can be cordially recommended.

TUBERCULOSIS OF BONES AND JOINTS. By N. Senn, M.D., Ph.D.
Philadelphia and London: The F. A. Davis Publishing Company, 1892.

Senn's name is a sufficient guarantee of the fact that not only does this work represent an exhaustive review of current literature upon tuberculosis of the bones and joints, but also the results of experimental investigation and of extended clinical study.

The histology of tuberculosis is first discussed; then follows a description of tubercular abscess, together with the appropriate treatment. In considering the use of drugs, the employment of cod-liver oil emulsion is discountenanced, pure oil being preferred. Tapping, antiseptic irrigation, and subcutaneous iodoformization is the method of treatment preferred. This treatment should be repeated every two weeks until the abscess cavity has become obliterated. Where the abscess is open and suppurating, the iodoformization should be preceded by incision, scraping of the inner surface of the abscess, and thorough application of peroxide of hydrogen. After the abscess has been rendered aseptic by such treatment, iodoform may be employed, as in closed tubercular cavities. Tubercular bone-affections are discussed at length in Chapter IX. Under the head of "Diagnosis," the statement is made that the existence of an area of tenderness, corresponding to the tubercular focus in the interior of a bone, is one of the surest indications of the existence of osteo-tuberculosis.

Akeidopeirastic—that is, puncture of the diseased area by means of a stout needle—is advised as a means of clearing the diagnosis in doubtful cases. Further light may be thrown upon the case by employing after this puncture a hollow needle, and aspirating enough of the contents of the cavity to practise inoculations upon guinea-pigs. In the treatment of tuberculosis of the bones, the administration of a combination of iodide of potassium with syrup of iodide of iron is recommended. Physiological rest is to be insisted upon, and parenchymatous injections of ten-per-cent. solutions of iodoform or of balsam of Peru are strongly advocated. Ignipuncture is not absolutely rejected. If an accessible tubercular focus can be accurately located in the interior of a bone, this method of treatment should receive a trial, as it is not attended by any risks, and frequently effects a cure. The Paquelin cautery, heated to a dull red heat, usually can be carried through the softened bone overlying the tubercular focus. This operation gives abundant drainage, relieves tension, destroys all or part of the invaded tissue, and excites a plastic osteo-myelitis which limits the disease.

To insure a successful issue it is absolutely necessary to prevent infection with pus microbes. This treatment is most useful in dealing with accessible foci in the epiphyses of the large bones, and in the early stages of tuberculosis of the wrist and tarsus.

The chiselling operation should be undertaken, if possible, before swelling of the soft parts has occurred. After reaching the cavity, thoroughly clearing it out and curetting it, the application of a Paquelin cautery is sometimes of service. After the cavity has been thoroughly irrigated with iodine and water, dried, and iodoformized, it is packed with antiseptic decalcified bone-chips, iodoform is dusted freely through the chips, the periosteum is separately sutured over the bone-packing, sufficient space being left to insert at the lower angle of the wound a few threads of catgut to serve as a capillary drain, the external wound is sutured and dressed, and the limb is immobilized in a splint. It should be kept in an elevated position for at least six to twelve hours. In all these operations the Esmarch tube should be employed. Even should suppuration follow the operation, secondary implantation with decalcified bone-chips is advised as soon as the cavity is made thoroughly aseptic.

The pathology, etiology, and the symptoms and diagnosis of tuberculosis of the joints are discussed at length; and in considering the treatment, tuberculin is dismissed as unsafe and useless.

Parenchymatous and intra-articular injections, however, receive high endorsement. Of the various materials advised, Senn prefers iodoform (ten per cent.) solution in glycerin

or olive oil. An interesting series of clinical cases is cited in support of his statement as to the value of this method.

In regard to arthrectomy, the author holds that this operation has a promising future in the treatment of primary synovial tuberculosis of the knee- and elbow-joints; but it is not equally applicable in similar affections of the other larger joints. Atypical and typical resections, with the indications and merits of each, are described. A chapter is devoted to the post-operative treatment of these cases. Guaiacol (in doses of from 2 to 5 drops two to four times a day) is advised, and prompt operation on local relapses is urged. The final chapters of the book are devoted to tuberculosis of special bones and joints.

Gluck's ivory joints are disposed of by the statement, "The procedure has even now only an historical interest."

This work, showing, as it does, a profound study of the literature of the subject, a wide experience with its clinical aspects, and written in the author's clear, forcible style, will add fresh honors to one who has already won a distinguished reputation as a teacher.

Perhaps the only adverse criticism that could be offered is that the author is somewhat discursive. He gives us, however, statements founded on fact, he gives all that is best and most recent on the subject which he writes of, and he has produced a work which no educated surgeon can afford to slight. He has indirectly benefited thousands of sufferers by popularizing knowledge of the important affections upon which he writes.

ADDRESSES AND ESSAYS. By G. Frank Lydston, M.D. Second edition, revised and enlarged.
Louisville, Ky.: Renz & Henry.

This book represents a collection of the author's papers, which have for the most part appeared separately in medical journals.

The first paper deals with the "Evolution of the Local Venereal Diseases;" then follow theses upon "Gonorrhœa in Women," "Hypertrophy and Hyperplasia consequent upon Lesions of the Genitalia," "Aberrant and Sexual Differentiation," "A Plea for Early Operation in Acute Peritonitis," "Studies of Criminal Crania," "Materialism *versus* Sentiment in the Study of Crime," "The Rationale of Extension of the Spine," "Tropho-Neurosis in the Phenomena of Syphilis," "Varicocele," "Observations on Stricture of the Urethra," "The Treatment of Syphilis," "Sexual Perversion," "Urethral and Genital Neuroses;" and, finally, "A Case of Circinate Papulo-Erythematous Syphilide, with Psoriasis Palmaris Syphilitica."

Lydston is so well known as a brilliant and original writer, that these papers come as old friends to the physician who is familiar with current journalism. To those who have not seen these papers this volume will be of distinct service. To the reviewer the theses which are especially worthy of commendation are those on "Varicocele," on "The Treatment of Syphilis," and on "Stricture of the Urethra." The explanation of the phenomena of syphilis on the tropho-neurotic basis is exceedingly ingenious, and the thesis upon "Acute Peritonitis" is characterized by sound common-sense. The specific nature of gonorrhœa is not recognized, though this seems, in the light of Bumm and Wertheim's experimental and clinical studies, about as clearly demonstrated as is the specific nature of tuberculosis.

It is a tribute to the author's honesty to find stated, on reading over the chapter on "Varicocele," that excision of the scrotum, even though performed in the most thorough manner, does not necessarily accomplish a radical cure.

The fact that this collection of papers is now in its second edition shows the appreciation with which it has been received by the profession.

GENITO-URINARY AND VENEREAL DISEASES: A MANUAL FOR STUDENTS AND PRACTITIONERS. By Charles H. Chetwood, M.D. Series edited by Bern B. Gallaudet, M.D.
Philadelphia: Lea Brothers & Co., 1892.

This quiz-compend upon genito-urinary and venereal diseases has the merit of reflecting the modern practices in the treatment of diseases with which the manual deals. Throughout the whole volume the classification and teachings of Keyes are strongly reflected. In a book such as this, made up of questions and answers, a great deal depends upon the directness and clearness of the questions. On this point the book is open to some criticisms. Thus, on page 91, the question is asked, "What is the course of treatment to pursue in cases of enlarged prostate which require attention?" The answer is given in a little over two pages of closely-printed matter, not always clearly to the point, and containing directions which could better have been expressed in less space.

Cystitis is disposed of in two pages. The use of the cystoscope is properly commended.

In describing the operation of varicocele the very admirable procedure of Dr. Keyes is given

at length. This is quite proper, but the operation which is far more common—that is, incision, excision, and ligation—should also be described. To the radical operation of ligation and excision of veins, together with extensive resection of the skin of the scrotum, attention should also be called.

The book is to be commended for its thoroughness and for its accuracy of statement. The only criticism to be made is that there is a certain lack of clearness in expression.

THE PHYSICIAN'S LEISURE LIBRARY. GONORRHŒA AND ITS TREATMENT. By G. Frank Lydston, M.D. Detroit, Mich.: George S. Davis, 1892.

Lydston is so widely known as an original writer that an exposition of his views upon gonorrhœa and its treatment is peculiarly acceptable.

He takes ground against the gonococcus as invariably the cause of virulent urethritis. He holds that proof of this fact is still wanting, and he presents by all odds the strongest and best-considered arguments against this now generally received teaching the reviewer has yet seen.

Everywhere are to be found evidences of wide clinical observation. Under treatment, the author's teaching and advice will certainly meet with the hearty co-operation of most of those who have had large experience.

Speaking of the endoscope, he states that for practical purposes the ordinary straight, hard rubber or silver tube, with the addition of a strong light reflected from a laryngoscopic reflector, or from one of the modern small reflecting-lamps, will be found sufficient. In the abortive treatment of gonorrhœa by strong solutions of nitrate of silver, or by means of copious solutions of hot bichloride, he has little faith. Virulent cases he believes should be confined to bed for from a week to two weeks. If this can be accomplished, the majority of cases can not only be subdued, but stricture and other complications and sequelæ would be almost unheard of.

The theory is advanced that many individuals who, in after-life, are afflicted with prostatic hypertrophy, owe that condition to an early gonorrhœa.

The author prefers, for the abortive treatment of urethritis, prolonged irrigation of the anterior portion of the canal with a weak solution of the bichloride of mercury,—1 to 20,000. This should be used as warm as can be comfortably borne, and kept up for half to three-quarters of an hour at a time, the process being repeated three or four times during the first twenty-four hours, after which the treatment should be stopped. At the end of twenty-four hours of abortive treatment, whatever drug be used, all local treatment should be stopped for a few days, alkaline diuretics, restricted diet, and attention to hygiene being the only permissible measures of treatment. In a few days, if a virulent urethritis does not develop, mild astringent injections and the internal administration of balsams are indicated. This book represents the clear ideas of a careful and original thinker upon the subject of gonorrhœa. As such it will be read with interest and profit by both the specialist and general practitioner.

DISEASES OF THE CHEST, THROAT, AND NASAL CAVITIES, INCLUDING PHYSICAL DIAGNOSIS AND DISEASES OF THE LUNGS, HEART, AND AORTA, LARYNGOLOGY, AND DISEASES OF THE PHARYNX, LARYNX, NOSE, THYROID GLAND, AND ŒSOPHAGUS. By E. Fletcher Ingals, A.M., M.D. Second edition, revised and enlarged. Illustrated.
New York: William Wood & Co., 1892.

It is a matter of surprise to many general practitioners that specialists in diseases of the chest rarely attempt to treat diseases of the upper air-passages, and that rhinologists and laryngologists confine their studies to the lungs and pleura. In many instances the condition of the larynx and trachea is so closely associated with pulmonary difficulty that only the most arbitrary judgment can possibly account for ignoring the condition of any one of these areas.

One of the few physicians in this country who treat the upper respiratory tract as the lower respiratory tract is Dr. Fletcher Ingals, of Chicago, who, recognizing that the profession had no book which was distinctly devoted to the entire respiratory tract and not to a single part of it, has published his lectures to the students of Rush Medical College, to which have been added a study of the etiology, symptomatology, and pathology of these diseases, points not discussed in the first edition of the work.

We heartily recommend the book to those who desire to become thoroughly acquainted with the best literature upon diseases affecting the respiratory tract, and while we are forced to differ from the author in a number of points, we cannot but admire the thoroughness with which he has completed his task.

The illustrations are unusually well selected, and in nearly every instance show exactly what the text requires. We note, however, that Dr. Ingals is still one of those who believe that diphtheria is primarily a constitutional disease

with local manifestation. We also notice with regret that, while he quotes the studies of Prudden, Ruffer, Klebs, and Löffler, nothing is said about the equally important researches of Welch and his collaborators in Baltimore. Perhaps, if more attention had been paid to these points, Dr. Ingals would not at the present time regard the disease as one which is primarily constitutional.

In the treatment of diphtheria too little recommendation is given to the use of peroxide of hydrogen, and too much attention is paid to the employment of far less valuable remedies.

In the treatment of obstructions of the respiratory tract, Dr. Ingals prefers intubation to tracheotomy in children under five years of age. In older children he believes "intubation to be not quite as satisfactory as tracheotomy," but, nevertheless, to be resorted to freely in any instance where the more severe operation is forbidden.

A Treatise on Nervous and Mental Diseases; for Students and Practitioners of Medicine. By Landon Carter Gray, M.D. Illustrated.
Philadelphia: Lea Brothers & Co., 1893.

Dr. Gray has given us a book of nearly seven hundred pages, which has a right to be placed on the plane with the other works on nervous diseases written in the last few years by American authors.

While it does not show the peculiarly original characteristics of Gowers's work, we doubt not that for American uses it will prove of value. The author has avoided the danger of excluding the opinions of others in order that his own ideas might find full play, and yet has not loaded the text with references which make its perusal difficult. Scattered through the book there are a number of copious bibliographies, and at the end of the work he has resorted to the somewhat ancient, but perhaps useful, custom of providing a glossary of the terms commonly employed in discussing nervous diseases.

For the country practitioner, the very large number of clear illustrations which are presented cannot fail to be of very great service, because in most cases they present very important types of the diseased conditions which they represent.

It has been one of the dark spots in the fair fame of neurology that so little has been done by neurologists which has looked towards the treatment and cure of nervous diseases. It is true that in many instances nervous diseases are at present beyond our therapeutic control. This is, however, no excuse for losing sight of the true cause of the existence of the physician,—namely, the cure of the disease. Recognizing this need in neurological literature, Dr. Gray points out in his preface that he has endeavored to present the best therapeutic possibilities which can be offered in the treatment of nervous diseases, and it is but fair to him to say that his book is peculiarly valuable, because he has discussed with unusually clear insight into the subject the value of the various remedies which have been employed by physicians in the treatment of nervous diseases. Though it may be said that in many instances these measures amount to but little, our patients have a right to demand them, and, so far as we know, Dr. Gray's effort is practically the first successful one to present to his professional colleagues the best information concerning these points.

Naturally the author gives full credit to the neurologists who in this country have deserved mention for their thorough studies in nervous diseases, but nevertheless has been cosmopolitan enough at the same time to recognize the good work done by Europeans.

A Text-Book of Nervous Diseases, being a Compendium for the Use of Students and Practitioners of Medicine. By Charles L. Dana, A.M., M.D.
New York: William Wood & Co., 1892.

Within the last two years four books upon nervous diseases, of considerable note, have been placed before the profession by New York authors,—namely, the last edition of Hammond's well-known work, under the editorship of the author's son; the book of Dr. Landon Carter Gray, of Brooklyn, which has just been reviewed in the Gazette; the work, entitled "Familiar Forms of Nervous Disease," by Dr. M. Allen Starr, which does not profess to be a complete work upon the subject; and, finally, the book which we now have under notice. This one is published in the same series and in the same style as the work of Dr. Reynolds upon obstetrics, which, it will be remembered, received such a favorable review in the columns of the Gazette early in 1892.

A point which strikes us as being particularly valuable about Dr. Dana's book is the unusually copious and clear illustrations, which are found on almost every page. The frontispiece is a composite photograph, showing the relations of the cranial surface to the fissures and convolutions, after Alec Fraser. The author has not been content with introducing old cuts, with which almost every one is familiar, but many of them are new. The illustrations are not only of cases and of pathological

changes, but show the manner in which various forms of apparatus can be employed in treating nervous diseases, or for the purpose of forming a correct diagnosis. We believe that the author has succeeded in accomplishing that which he states in his preface is his chief desire,—namely, to present the American medical profession with a comparatively small work which would be creditable to American neurology. The illustrations of the manner in which the various reflexes are to be obtained are not found in most works upon the subject, and will add considerable to the value of the work in the hands of the student or resident hospital physician. Of all the American works on neurology this impresses us most favorably.

HYGIENIC MEASURES IN RELATION TO INFECTIOUS DISEASES. By Geo. H. F. Nuttall, M.D., Ph.D.
New York: G. P. Putnam's Sons, 1893.

Dr. Nuttall has written a book which is almost too elementary for the practitioner who is at all in touch with the advances recently made in public health, and perhaps a little advanced for the ordinary layman, yet its scope of usefulness will be found rather with the latter than with the former. In many instances, where the physician finds it impossible to give verbal directions which he thinks necessary for avoiding the dangers of infection, the presentation of a copy of this little work will, if the patient will read it, prevent many difficulties.

The book has the stamp of Johns Hopkins Hospital practically on every page, and the measures of disinfection and antisepsis recommended by members of the well-known staff of that institution are constantly given as the best, which, we doubt not, is but true.

A MANUAL OF THE PRACTICE OF MEDICINE. PREPARED ESPECIALLY FOR STUDENTS. By A. A. Stevens, A.M., M.D. Illustrated.
Philadelphia: W. B. Saunders, 1893.

Dr. Stevens's book professes to be nothing more than a digest of most of the prominent works upon the practice of medicine and allied branches. Within the short space of five hundred pages, including the index, Dr. Stevens has succeeded in placing pretty much all the information which he believes important in connection with the study of the practice of medicine. The author's experience as a teacher of students has been sufficiently wide to give him a very correct idea as to their needs, and we doubt not that he has provided a book filled to the brim with the points most needed for the quiz class. The necessity, however, of concentrating the information necessarily makes the book rather uninteresting, and divides the text into such short sentences that it partakes largely of the character of the ordinary quiz compend. It has practically all the advantages and disadvantages of this well-known class of medical publications.

A POCKET MEDICAL DICTIONARY, GIVING THE PRONUNCIATION OF ABOUT TWELVE THOUSAND PRINCIPAL WORDS USED IN MEDICINE AND THE COLLATERAL SCIENCES. By George M. Gould, A.M., M.D.
Philadelphia: P. Blakiston, Son & Co., 1892.

This is the most modern and handy dictionary which we have yet seen. It is somewhat more bulky than the small dictionary of Cleaveland, which is so well known to practitioners and medical students. It contains tables of the principal arteries, of muscles, nerves, and bacteria. The dose-table is taken bodily from the "Physician's Visiting-List," published by P. Blakiston, Son & Co.

THE MEDICAL NEWS VISITING-LIST FOR 1893.
Philadelphia: Lea Brothers & Co., 1892.

The *Medical News* "Visiting-List" possesses all the advantages in this issue which have made it popular in the past. It comes either with the thumb-letter index, which increases its value, or without this addition. Probably the most valuable material in the first thirty pages of text is the description of the ligation of arteries, with a diagram showing the incision for each ligation. In the dose-table a double column is given, giving the dose in grains or minims and in grammes or cubic centimetres. Those who have used this list before undoubtedly will employ it again, as they have learned by experience that it is as satisfactory as any that can be obtained.

THE ANATOMY OF THE PERITONEUM. By Franklin Dexter, M.D. Illustrated.
New York: D. Appleton & Co., 1892.

To many medical students and physicians the anatomy of the peritoneum is very much like a Chinese puzzle, and there are many practitioners who, after years of active professional work, have no definite idea of the manner in which this very important membrane is reflected over certain portions of the abdominal viscera. While they know that we have a lesser and greater peritoneal cavity, they are not very clear in their minds what these two terms indicate. Dr. Dexter has contributed to medical literature a little brochure, which does much towards making this subject clear. The diagrams, which are printed on every other page, are most of them colored, and illustrate

very effectually the description, which is printed on the opposite page.

While the book has not a very wide range of usefulness, it is an interesting contribution to the subject.

Correspondence.

LONDON.

(From our Special Correspondent.)

Thymol as an Anthelmintic—Effect of Ergot on Uterine Involution—Lactic Acid in Pharyngeal Tuberculosis—Anæsthetics in Gynæcology—Abdominal Section in Pelvic Peritonitis.

The therapeutic uses of thymol have of late years received some recognition, and it is now reckoned that this drug is one of our most valuable anthelmintics. That it is not of universal application must, however, also be recognized, and the limits of its utility as an anthelmintic have been very well defined in a recent paper by Sonsini. Thymol was first employed for this purpose by Bozzolo in 1880, in cases of anchylostomiasis, and with such success that other practitioners were tempted to expect to find it the possessor of universal parasiticide properties. It has been warmly advocated as a remedy for all intestinal worms, as well as for the filaria sanguinis hominis. Dr. Crombie, of Calcutta, has recently combated this latter assertion, but holds that it is efficacious for most other intestinal parasites. This is not quite the experience of Sonsini. While finding thymol to succeed in most cases of anchylostomiasis, he has found it fail in one case of this disease. However, he finds that expulsion of the anchylostoma is the rule, but that other worms are but rarely expelled after the use of thymol. In the case of the ascaris lumbricoides, he warmly advocates santonin, or, better still, its derivative, santoninissima, first introduced by Coppola. For oxyurides, thymol is not of greater efficacy than the older remedies. There is a further fact with regard to the drug,—that if it be absorbed in large quantities it is liable to produce toxic effects characterized by vertigo, by a brown coloration of the urine. Such symptoms rarely follow a maximum daily dose of 4 grammes, but may be induced if large quantities be given by intestinal injection.

As for tæniæ, the author has never tried thymol for tænia solium or tænia mediocanellata, deeming pelleterine, properly administered, the best remedy in such cases. Liquid extract of male fern and calomel may also be of the greatest service. To summarize, Dr. Sonsini thinks thymol very efficient against anchylostoma, but most uncertain in the case of other nematoides. He prefers to give it in the form of powder, enclosed in wafer-paper, rather than as tabloids.

Much doubt has latterly been thrown on the question of the desirability or otherwise of giving ergot during the lying-in period, and some have inclined to discard the drug altogether in this connection. Some researches of Blanc, of Lyon, have apparently given some justification for this attitude. He found that ergot, given during the first five or ten days of the lying-in period, had practically no effect on the process of involution, although a contrary opinion had been expressed by Dr. G. E. Herman. This last authority now justifies his former opinion, and points out that Dr. Blanc's cases were "picked" ones of normal labors, in which no irregularities of involution were to be expected. In his own cases, which were taken at random, there was the most distinct evidence that when the causes of subinvolution were present, ergot prevented their manifestation. He is convinced that while in a perfectly normal lying-in ergot is not required, yet when any cause of imperfect involution is present or suspected, ergot, given throughout the lying-in period, will be a safeguard against untoward effects.

The value of the local application of lactic acid in cases of tubercular ulceration of the pharynx was once more demonstrated by Dr. Percy Kidd at the Medical Society's recent meeting. He showed a patient of forty-one years, who had been relieved of a very extensive ulceration, which caused the most intense pain on swallowing by this method. He considered that the most suitable cases for this treatment were those presenting ulceration without thickening of the mucous membrane. In the case of induration with an unbroken surface, the Paquelin cautery should first be applied, after which the acid should be freely and thoroughly rubbed in. Great patience and perseverance were necessary in order to insure good results.

The subject of anæsthetics, while of interest to all branches of surgery, is particularly interesting in connection with gynæcological practice. In view of the recent very frequent deaths during anæsthesia, and of the large amount of research which has been, and which still is being, brought to bear on the question, a paper by Dr. Dudley Buxton, on the "Uses of Anæsthetics in Gynæcology," will attract particular attention. When it is remembered that not only the success of the operation but

the very life of the patient may be jeopardized by the manner in which the anæsthetic is administered, it will be impossible to deny the importance of a complete knowledge on this point.

In gynæcology there are peculiar requirements, which are absent, or at least not so urgent, in general surgery. These were the points discussed by the orator. The choice of a suitable anæsthetic, as well as the method of its administration, are points of especial importance, partly on account of the necessarily long duration of the anæsthesia, and partly also on account of the position in which the patient has often to be placed, a posture which often interferes seriously with the comfortable administration of the anæsthetic. An abdominal section may be a very simple or a very serious and complicated operation, both for the surgeon and for the anæsthetist. Such an operation gives rise, as a rule, to a very considerable amount of shock, due partly to the necessary manipulation of viscera, and partly also to the contact of air with the abdominal cavity. In such cases an anæsthetic, by either adding to or lessening the shock which exists, may turn the balance against or in favor of the patient. But the question of shock is a most complex one, and depends also on a large number of factors. Among these is the amount of hemorrhage during the operation. It is advisable, therefore, to choose, as far as possible, an anæsthetic which does not encourage hemorrhage. Finally, the convenience of the operator must be studied. The claims of the more usual anæsthetics must, therefore, be considered with regard to—1, the patient; 2, the operation; 3, the operator.

Chloroform has everything in its favor, save its depressant action. It is extremely portable, and requires no more complicated apparatus for its administration than a folded piece of lint. It insures placid anæsthesia, and lessens immediate hemorrhage by reducing blood-pressure and quieting the cardiac movements. It also quiets respiration by its action on the medulla. For an abdominal section, from the operator's point of view, no better anæsthetic could be desired. It has been also claimed for chloroform that the after-effects are less than in the case of ether. This may have been true in the days when enormous quantities of ether were administered, but at the present time, when weight for weight, we do not require to use a larger amount of the one than of the other, this argument will hardly hold good. Again, the important plea urged for chloroform as against ether in large operations, such as hysterectomy, that the tendency to hemorrhage is less, will not bear close scrutiny. Truly, the tendency to *immediate* hemorrhage is less on account of the temporarily reduced blood-pressure, but on returning the patient to bed this passes off, giving place to acceleration and increased force of the heart-beats. This state of things directly encourages subsequent oozing of blood. In the case of ether, the condition is one of constant stimulation during the administration, so that all hemorrhage can be seen and arrested during the operation, and there is little fear of subsequent trouble.

The pleasantness of the smell of chloroform, the ease of its administration, and the quiet anæsthesia induced would undoubtedly be most important arguments in its favor for abdominal operations were it not for the fact that there is another grave objection to its use. Whether we consider that it acts through the heart, the lungs, or the nervous system, there remains the unpleasant fact, so abundantly illustrated lately, that chloroform does kill patients out of hand and in a manner which at present baffles all our efforts to obviate. In the orator's experience at the Sōho Square Hospital for Women, he often found the use of chloroform accompanied by grave danger, due, he believed, to its action on the heart. So that in every case in which a selection has to be made, we must consider whether the advantages counterbalance the drawbacks.

One other point must be mentioned, which is this: It has been stated that, while chloroform anæsthesia is rapid, it is dangerous; that etherization is safe but slow; and that therefore it is best to use the A.-C.-E. mixture in most cases. This can no longer be maintained, for it is now admitted that the only safe method of giving chloroform is by inducing anæsthesia slowly (eight to ten minutes), while any excess over two minutes in the case of ether is entirely unnecessary. Practically, therefore, when we require a rapid anæsthesia without struggling, as in patients with weak hearts and brittle vessels, we shall do best to employ *ether*, but to do so after a preliminary administration of *nitrous oxide*. This forms an apparently ideal combination.

The grave indictments commonly brought against the use of ether are as follows: It has been said to cause struggling, which may produce serious after-effects; pulmonary troubles consequent on the cooling due to its rapid evaporation from the pulmonary mucous membrane; it has been also said to produce more nausea and vomiting than does chloroform. As regards the first point, struggling may be

prevented in the way just indicated. Further, the amount of cooling due to evaporation need not be great, provided the ether be properly given by Clover's method and in *minimum quantity*. Again, in the author's practice, there has not been a case of nephritis directly due to ether, and ether bronchitis is distinctly uncommon, at any rate in this country. It may more often be correctly attributed to exposure of the body during the operation. To sum up, we must say of ether that it possesses decided advantages, and of its disadvantages, that these have been in part exaggerated and are in part the result of faulty administration. It is alleged that if chloroform kills it kills at once, but that ether may kill any time within a fortnight, and with this Dr. Buxton is inclined to agree. He also maintains, however, that the sequelæ of etherization are almost entirely preventable, so that this alleged drawback will have little weight with him. In conclusion, let the anæsthetic, no matter which be chosen, be administered by "rule of thumb," by an inexpert practitioner, and there is no wonder that accidents occur. In experienced hands these are rare.

The Obstetrical Society has just brought to a conclusion a most interesting discussion on the value of abdominal section in certain cases of pelvic peritonitis. The importance of this subject will be at once recognized, and, since it may be accepted as an axiom that these cases, which form a very important proportion of the whole number of serious gynæcological cases, nearly always come, in the first instance, under the care of the general practitioner, it is very essential that correct views should be presented to this section of the profession. Dr. Cullingworth, in his opening paper, considered the question as to whether abdominal section is or is not often called for in such cases. Dr. Cullingworth himself is a believer in the efficacy of the operation in a great number of cases, but this opinion was by no means acceptable to all present. Now, although the title of the paper was indefinite, I conceive that the really debatable ground was enclosed within fairly narrow limits. It is not in connection with cases of peritonitis complicating ovarian tumor, cancer of the uterus, etc., that the controversy as to whether abdominal section is necessary rages, for on these points all are now fairly agreed. The doubtful cases are those in which there is a chronic inflammation of the uterine appendages, which has led to closure of the Fallopian tubes, which are often at the same time thickened and distended with fluid, and constitute either a hydro-, pyo-, or hæmato-salpinx. There is no doubt that this condition of things is very frequently met with, and, in the majority of cases, is a distinct danger to life. It is equally certain, however, that in a number of cases the disease passes into a quiescent state without active surgical interference, as the result of simple palliative measures. In favor of the operative treatment we have the following facts:

Dilatation of the Fallopian tubes may frequently give rise to pain in the abdomen, backache, and irregularity of the menstrual function, the catamenia being either scanty, excessive, or attended with considerable pain.

Although under palliative measures these symptoms may for a time become quiescent, they more frequently recur, and the patients become chronic invalids.

In the majority of cases it is possible to remove the diseased organs with comparative ease, though this is by no means always the case.

The presence of a pyo-salpinx is, further, a distinct danger to life, though a hydro-salpinx may be comparatively innocent.

The points advanced by the opponents of operative measures are these:

The operation, while it relieves some cases, does not always do so, and in some instances things are distinctly worse after than before operation.

In a certain proportion of cases adhesions between the adjacent organs render complete removal either extremely difficult or impossible.

While the mortality from disease of the Fallopian tubes is not so large, that from the operation for its relief is by no means inconsiderable.

It will, therefore, be admitted that there is a very grave responsibility resting with the surgeon who advocates abdominal section as a routine practice in cases of disease of the Fallopian tubes, such as we have been considering, and that it will be necessary to advise each case according to its merits. There is no doubt that a careful examination under anæsthetics will give valuable information as to the condition of the surrounding parts, and enable us to judge in some measure of the probable ease with which the operation can be performed, and this should never be omitted. Of course, should operation be decided upon in any case, its success must largely depend on the extent to which surrounding parts are involved. There is, however, no doubt that the time has not come when hard-and-fast rules can be formulated so as to guide us to a certain decision as to when abdominal section should or should not be performed.